

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 246. (No. 37, Vol. V.)

SEPTEMBER 13, 1913.

[Registered at the G.P.O. as a Newspaper.] [Weekly, Price 8d. Post Free, 8½d.]

Flight.

Editorial Office: 44, ST. MARTIN'S LANE, LONDON, W.C.

Telegrams: Truditor, Westrand, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free.

United Kingdom ... 15s. od. Abroad ... 20s. od.

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EDITORIAL COMMENT.

The Disaster to Zeppelin "L 1." Any aeronautical calamity is equally a calamity to every nation participating in the progress of the science, and no Englishman worthy of the name can do otherwise than feel in the depths of his heart the sincerest sorrow at the fate that has overtaken the latest of Germany's great airships. Most unhappily, the accident has been attended with serious loss of life, and brave men have perished who were sorely needed to further the interests of the movement. These men were not only a credit to their own country, they were a credit to the era in which we live, as are all those who suffer themselves to be borne upwards towards the sky that they may learn to navigate the air.

With Count Zeppelin himself the whole world sympathises. Time after time has the rough hand of fate crushed in its grasp the fragile structures that he has designed so well. Dauntless, he has persevered to build again, and again the elements have destroyed his handiwork.

It is the first occasion on which lives have been lost in any of the many Zeppelin disasters. It was inevitable, of course, that sooner or later this fate should occur;

nevertheless, when the time comes, it is not less sad because we know that it is due.

The one redeeming feature in the gloomy picture of this as of the preceding disasters is the bold background presented, not only by Count Zeppelin's personal courage, but by the progressive spirit of the German nation. In our recognition and appreciation of this attitude towards aeronautics on the part of Germany, we set aside the prejudice of nations. Our interests are, firstly, the encouragement of aeronautics, and where we see the science making progress, there, too, we offer our unstinted support. Germany has done more than any other nation to develop the large airship, and we respect her for it; if our own country refuses to recognise the national importance of keeping abreast with Germany in this matter, it is England's loss, but it does not by one iota detract from the creditable work that Germany has herself accomplished.

Accidents, Belts, and Parachutes.

While flying a B.E. biplane near Farnham the other day, Kemp, who has been doing some very sensational banking lately by way of testing the factory-built machines, suddenly lost control of his aircraft at an altitude of about 2,000 feet. The stopping of the engine was apparently the initial cause of the mishap, according to the only accounts at present available. The reports say that he turned over several times in the air, but at last succeeded in regaining control of his machine and in alighting safely.

Whatever the cause and details of the accident may be, one of the morals to be drawn from it is, of course, the fundamental advantage of flying high. If anything approaching the story of the mishap actually took place, it is quite apparent that Kemp would have been dashed to pieces had he been flying at a low altitude.

Yet another important point is associated with the question of securing the pilot in his seat. We do not know whether Kemp was strapped in, but the fact remains that he was not thrown out. It was one of the sad features of Cody's fatal accident that both he and his passenger were projected from the machine and thrown to the ground an appreciable time before the machine itself struck the earth. As a matter of fact the fall of the machine was considerably broken by the trees into which it pitched, and although by no possible stretch of imagination could one say that such an accident was of

other than the utmost seriousness, it is just conceivable that the occupants of the machine might not have been killed if they had fallen with it. There have, at any rate, been several instances in which pilots have landed in timber without very seriously hurting themselves.

We do not wish to argue from this that it is necessary to wear a belt, because pilots feel at the present time that the pros and cons are pretty equally divided. There is at any rate a peculiar horror associated with being tied to the wreckage of a burning aeroplane, and although belts are made so that they can be instantly detached under normal circumstances, there still remains a certain amount of doubt as to their action in emergency. Furthermore, special attention needs to be given to the adjustment of the belt if it is to avoid causing serious internal stress in the event of a sudden shock.

We anticipate, as a consequence of the foregoing remarks, a further batch of letters from enthusiasts of the parachute. Whenever there is an accident, we always receive an extraordinary crop of correspondence in which the same sort of safeguards are recommended over and over again.

Cody himself once had an idea that it might be useful to carry a parachute coiled up like a turban on his head. We question very much, however, whether Cody was ever the man to have used it if he had had one made, and we doubt still more whether, had he been using it at the time of his fatal accident, it would have been capable of saving his life.

Frankly, we see very little future for the parachute as a life-saving apparatus in emergency on aeroplanes; with dirigibles it might be another matter. Nevertheless, we are far from dissuading the ingenious inventor from persevering with his attempts to devise a really satisfactory folding parachute that can be applied to the body in a moment, and that will open out with absolute certainty when the person jumps into the air.

Before Pegoud took to flying upside down he made, it will be remembered, the very remarkable experiment of jumping out of an aeroplane in full flight. He had a parachute attached to his body, and he alighted in safety. It seems to us that the value of the experiment is related very closely to the circumstances under which it is carried out, that is to say, we fancy that there may be more to be said for the ability to intentionally leave an aeroplane that is in perfect control than for the possible virtue of the parachute as a means of checking an aviator's fall in the event of disaster.

In military reconnaissance it is quite conceivable that it might mean a very great deal to be able to drop an observer in a certain place where it might be physically impossible to alight with the machine. If the observer could safely descend by the aid of a parachute it might be an undertaking that, upon occasion, would be well worth the risk.

One reason why the parachute is hardly likely to become the safety device on aeroplanes that some people seem to wish, is because it is so highly improbable that the average pilot or the average passenger would systematically wear it. Accidents are not limited to flights of great moment, such as might seem worthy of special preparation in advance, but they are just as likely to happen, as did Cody's accident, in a trial spin round the aerodrome.

We cannot exactly see in our mind's eye the modern pilot strapping on his parachute for such events. As well might one expect the seaside tripper who drowns himself with such exasperating regularity every holiday

time, to wear a cork jacket when he gets aboard his row-boat for his annual display of foolishness.

It is this human factor in the situation that militates against even the trial of such schemes, and this same human factor is a very good index to the relative values in the case. A pilot's job is to stick to his aeroplane. It was Kemp's duty to try and regain control of his machine, and it would have accomplished nothing towards the progress of aviation as such if he had been thrown out, or if he had jumped out. As it is, his experience has a real value. It is a first-class object lesson in the importance of flying high, which is always taught but not always practised, and it is calculated to instil greater confidence in the natural security of aeroplanes than even the prepared and very wonderful exploits of Pegoud.

So far as Kemp himself is concerned, he doubtless had an exceedingly *mauvais quatre d'heure*, but he has the supreme consolation of knowing that he succeeded at his job, and the congratulations that he will have received on his escape should on that account be worth to him infinitely more than those that he might have had had his machine been wrecked, and he himself been lowered from heaven on a string.

The Carping Critic.

Under the heading of "Mr. Hawker's Flight. What is the Moral of it?" there was published in the *Manchester Guardian* of the 1st inst. a letter, signed by a Mr. S. V. Bracher, whose address is simply "London," and which is so full of false premises and erroneous conclusions that we can hardly allow it to pass without comment. The main proposition which he sets out to disprove is, as he says, that the enterprising newspaper which promoted the competition is now declaring that the lesson to be learnt from it is that the Navy must have a great many waterplanes, and that the designers of British engines and the builders of British waterplanes must make their plans immediately. He apparently does not think either that the Navy requires waterplanes, or that it is essential that British designers of engines and aircraft should make any plans for the future. He begins his argument by saying:—

"To anybody able to keep cool amid the vast output of scare headlines and process blocks, it must be perfectly clear that one of the lessons of Mr. Hawker's plucky adventure is that the time is not yet ripe for great public expenditure on aviation. His achievement has enabled everybody to realise the extreme precariousness and uncertainty of aerial navigation as hitherto developed."

To take the first point, which apparently is that the Navy does not want waterplanes. We have no knowledge whatever of Mr. Bracher's status as an authority in this matter. For all we know he may be the power behind the throne at the Admiralty—presuming that such a personality is needed by My Lords—or, on the other hand, he may know even less of the technical side of the subject than we ourselves. It seems to us that the best reply we can make to the proposition as stated is: ask the Navy. But there is no need to ask the Navy, since we know perfectly well in advance what the Navy thinks of aerial navigation and its probable influence on war at sea. Is it for fun that the Navy is establishing aerial stations round the coasts and is training dozens of officers in the science of flight? Or must we regard things seriously and believe that the Naval authorities know their business? There is manifestly but one reply to this and we can safely leave even Mr. Bracher to figure it out for himself. Unless we are content to

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FLIGHT

MEN OF MOMENT IN THE WORLD OF FLIGHT.



THE GREEN ENGINE.

Mr. G. GREEN (Designer) and Mr. FRED MAY (Managing Director).

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ignore all the lessons of the past development of flight, and particularly those learned during the nearest approach to the "real thing" it is possible to devise, we must come to the cold-blooded decision that the Navy not only wants waterplanes, but wants them rather badly. Having got thus far with our argument, we come to the next Bracher point, viz., that the main lesson of Mr. Hawker's flight is that aviation is yet in so precarious a stage of development that it would be foolish to spend large sums of public money in the equipment of an aerial defence service. Does Mr. Bracher really seriously ask his public to believe that this is the one and only conclusion to be reached from the result of Mr. Hawker's attempt to circle the coasts of Great Britain? Unless he is writing with his tongue in his cheek—and we do him the justice of saying that we do not think this for a moment—then he must be woefully deficient in imagination and wanting in the power of logical reasoning. Let us hark back and see what actually did happen during this flight. We need not go over all the details of it. Quite sufficient that we point out to Mr. Bracher and others who may be of his way of thinking, that Mr. Hawker actually flew for a distance of more than a thousand miles—that is to say, a full two-thirds of the whole distance he set out to cover—and that he failed through absolutely no fault of the engine or of the machine. It was the lapse of the human factor that brought the enterprise to an untimely end. Therefore, it is fair to deduce the argument that already the machine and its engine have overtaken and passed the capacity of the man, and that if improvement is needed anywhere it is in the human and not the material machine. Let us say that we are not advancing this as a definite argument, but we do press the point that it is a fairer deduction than that reached by the correspondent of the *Manchester Guardian*.

No one claims, as far as we are aware, that the aeroplane has reached its ultimate stage of development, but is that any argument for holding back provided we can be satisfied that it has arrived at a useful stage? Not for a moment could such a contention be allowed. As well might it be argued that because the Dreadnought is practically obsolescent before it is completed for its first commission, we should cease building battleships until such time as the final development has been reached. The man who would seriously argue thus would, deservedly, be accounted a dangerous lunatic. Upon the same ridiculous principle no one would go into the water until he could swim; no business undertaking would be engaged upon until a profit actually accrues at the moment of starting, and so on.

The next point is this. Mr. Bracher says:—

"Experts are saying that seaplanes require much stronger frames, vastly more powerful engines, and far more effective float devices than have yet been provided. In short, design must be revolutionised. Clearly this is the time for experiment, and not for any wide scheme involving heavy expenditure."

THE ROYAL FLYING CORPS.

The following appointments were announced in the *London Gazette* of the 9th inst.:—

War Office Regular Forces.—R.F.C.—Military Wing.—The following are appointed to the Reserve: Brevet-Major Lionel B. Boyd-Moss, South Staffordshire Regt., May 1st, 1913. August 14th, 1913: Major Arthur B. Forman, R.A., and Major William S. Branker, R.A., a General Staff Officer, 3rd Grade, War Office. August 14th, 1913: Lieut. Llewelyn G. Hordern, Lancashire Fusiliers; Lieut. Hubert D. Harvey-Kelly, Royal Irish Regt.; Lieut. Ralph M. Vaughan, Royal Inniskilling Fusiliers; 2nd Lieut. Lionel S. Metford, Special Reserve; 2nd

Now, this impresses us as being specious argument, since it is the sort of thing with which it is impossible not to agree in principle, but before we arrive at complete agreement we must examine the proposition and see what we mean by it all. Nothing was ever yet first produced in its final and perfect state, but this last has inevitably been reached by stages involving long and careful experiment. From the line-of-battle ship of the Nelson era to the last *Centurion* is a far cry. Again, in the case of underwater craft, there is an enormous gap between the original Holland boat and the latest submarine of the day. Now, what would have happened in either case if it had been agreed that these vessels were still "experimental" and everyone had sat and waited for someone else to perfect them? Once more, the answer is obvious. We should be where we were a hundred or more years ago. Instead, however, of having adopted any such foolish policy we have gone on building and equipping ships which were the best we knew how to construct at the time and have developed accordingly until we have reached the super-Dreadnought and the submarine as we know them now—and still the end of development is not in sight.

Next, Mr. Bracher makes it a cause of complaint that the Naval and Military Defence Committee propose to

"Equip all the coast defences and defended ports of the kingdom with aviation stations, and in the case of the former, permanent establishments are to be maintained as soon as the necessary buildings can be erected and fleets of aeroplanes provided. Of the cost of this scheme one-third will be borne by the Navy and two-thirds by the Army."

He adds the surprising information that—

"the trouble is that, as a cold fact, the whole cost will be borne by the taxpayer"!!!

Now, unless we are content to assume that aviation has no bearing on military and naval operations, the answer is that these stations are necessary, even supposing the practical aeroplane has not yet materialised. That, of course, we do not allow since we know the contrary to be the case. But even supposing it were so, we do know that its day is not far off, and as we construct dry docks large enough to take in battleships far exceeding in size those at present afloat, we must provide accommodation for our air fleet to be, for the sane and simple reason that it takes far longer to put up buildings than to construct the aircraft to occupy them.

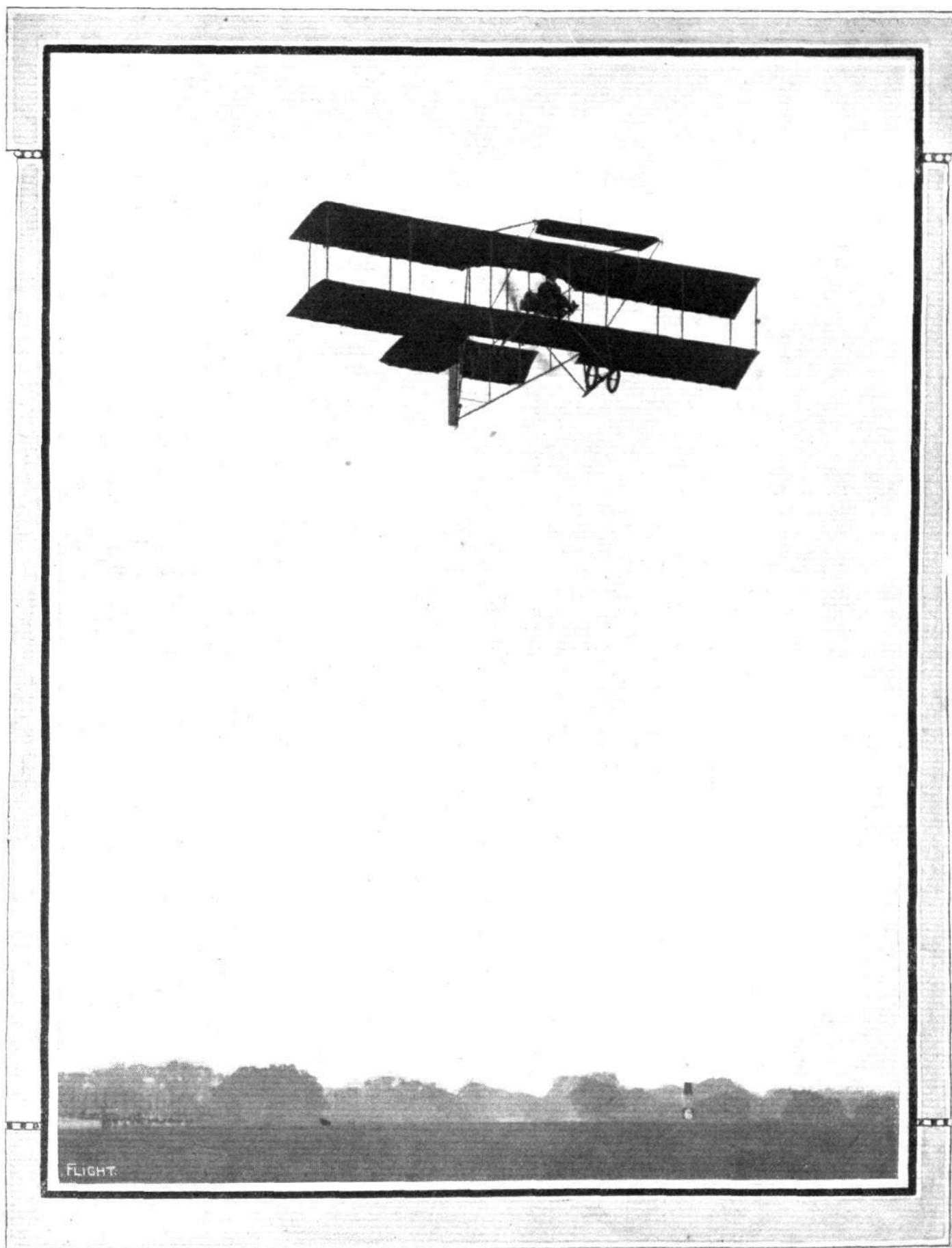
So far as we are able to read between the lines of the letter we have traversed, the meaning of it all is, that all the necessary experimental work is to be carried out by private firms at their own risk and cost, and that the State, which must ultimately benefit, should placidly stand aside and wait until private enterprise has accomplished the perfection of the machine. Never mind what is being done in other countries or what lead they may have or hold, let no penny of public money be spent on the development of aviation, but rather let that be left to the fools and the patriots. Such logic sickens us. Fortunately, we are able to think that it appeals to but a small minority of our countrymen.

Lieut. (Hon. Capt. in Army) Gilbert B. Rickards. Special Reserve; 2nd Lieut. Evelyn W. C. Perry. Special Reserve; Lieut. Leslie Da C. Penn-Gaskell, 3rd Batt. Norfolk Regt.; and 2nd Lieut. Victor A. Barrington-Kennett, London Balloon Company, R.E., Territorial Force.

Special Reserve of Officers.—R.F.C.—Military Wing.—2nd Lieuts. (on probation) are confirmed in their rank: Gilbert B. Rickards (Hon. Capt. in Army) and Evelyn W. C. Perry.

The following appointment was announced by the Admiralty on the 8th inst.:—

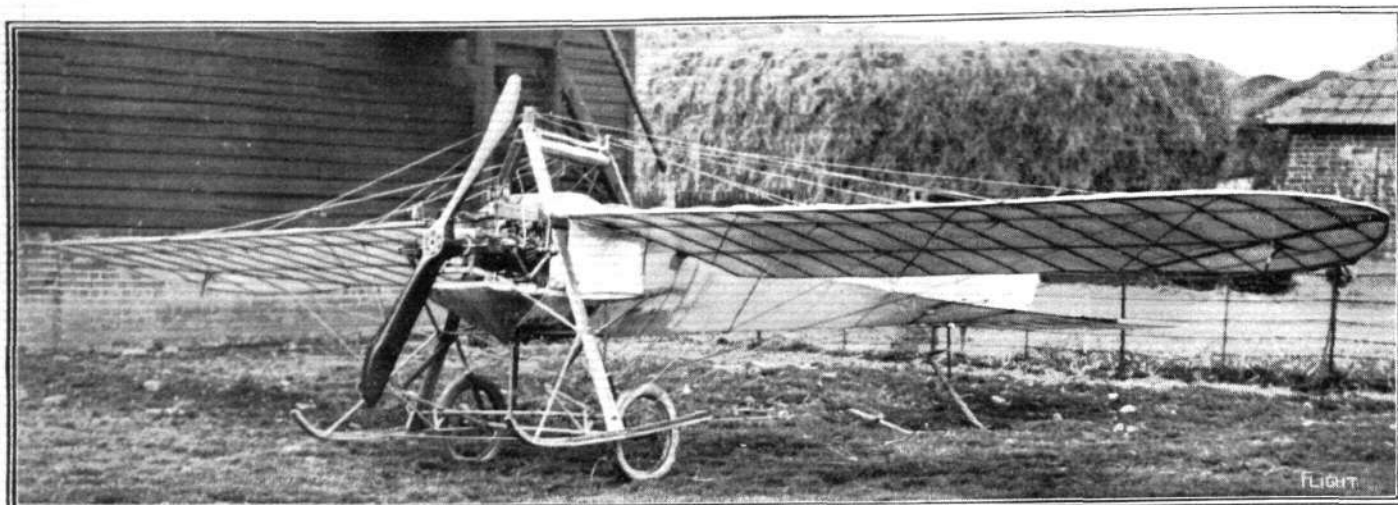
Royal Marines: Lieut. (R.M.A.) C. H. Collett to *Hermes*, for course of instruction at the Central Flying School, September 17th.



Mr. Marcus Manton flying the Grahame-White biplane at Hendon,

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THE WESTLAKE MONOPLANE.



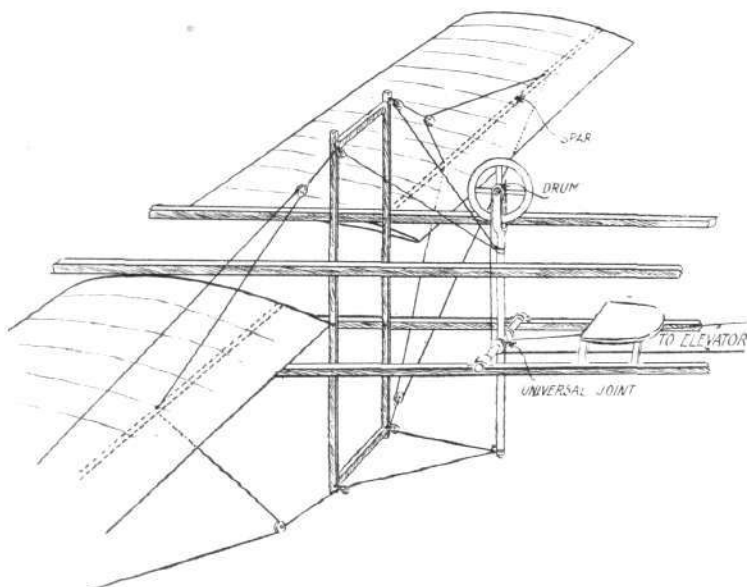
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Three-quarter view of the Westlake monoplane.

A NEW and very interesting machine on somewhat original lines has been added to the list of British-built aeroplanes. It has been designed and constructed by Mr. A. Westlake at Clacton-on-Sea. Mr. Westlake, who has had considerable experience in motor engineering, and is well known in the motor world, holds several patents relating to aeroplanes and aero-engines, his first patent being taken out so far back as 1904, and he has been constantly experimenting since then, so that, although little publicity has been given to his experiments, he is really one of the earliest workers in aviation in England.

An examination of the accompanying scale drawings and photos will show that in general outlines the Westlake monoplane is somewhat similar to certain well-known German machines. It is, however, only in its graceful lines, that this resemblance manifests itself; on closer inspection it is found to be quite different.

The backbone or *fuselage* is of rather unusual design, being of pentagonal cross section in front and triangular in the rear portion. The fan shaped tail is formed by sweeping the upper *longerons* outwards for the last few feet of their length. Carried on a tubular axle, supported on extensions of the *longerons*, is the elevator, which is of the flat non-lifting type, and is operated through cables passing round a drum on the control wheel in front of the pilot.

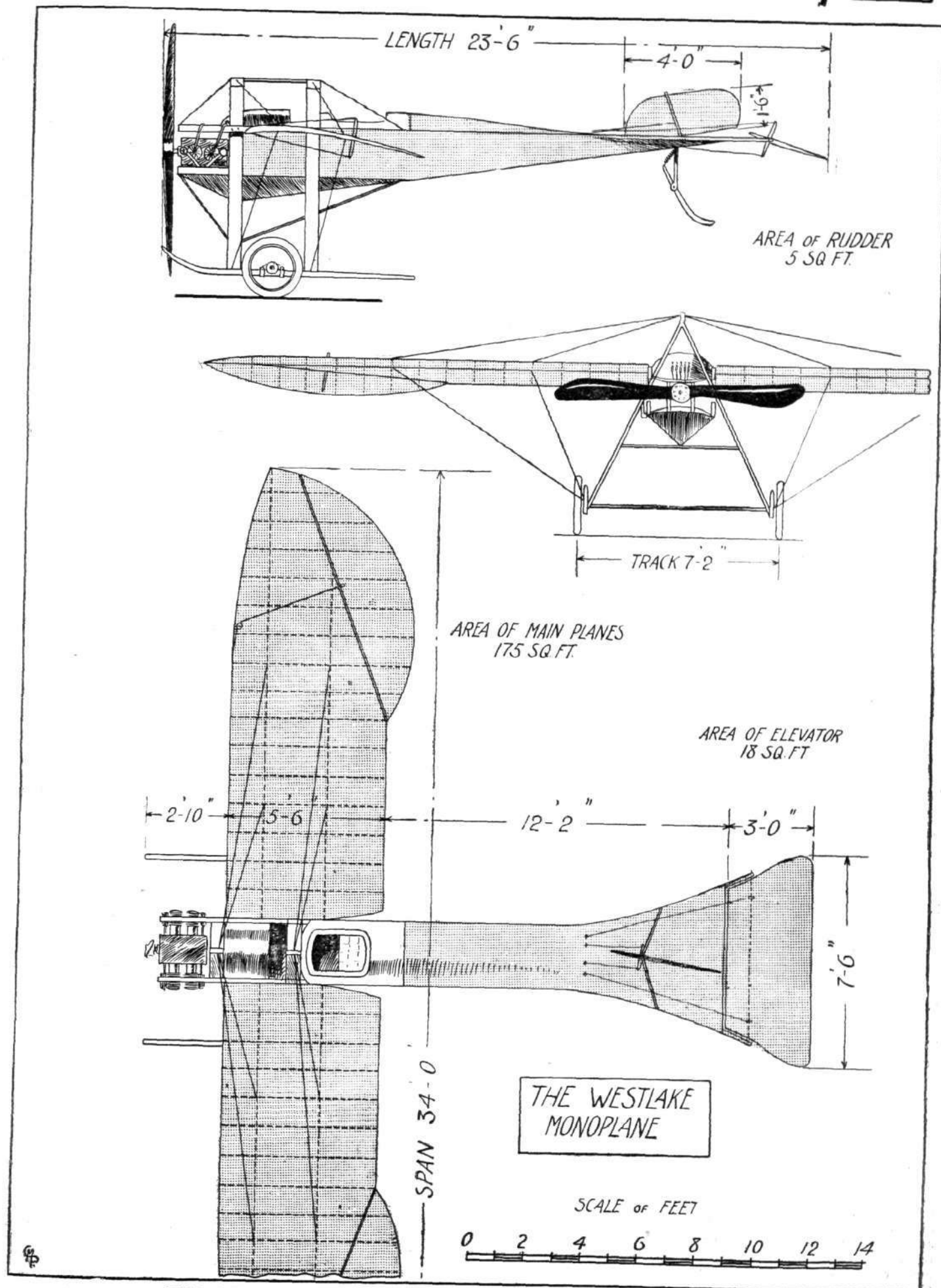


Diagrammatic sketch of the Westlake control arrangements for increasing or decreasing the angle of incidence on both wings simultaneously or independently. In the sketch only two pairs of cables are shown running to each wing. By interposing suitable compensating devices, such as pulleys, any number of cables can of course be used.



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Plan view of the Westlake monoplane.



THE WESTLAKE MONOPLANE.—Plan, side and front elevations, to scale.

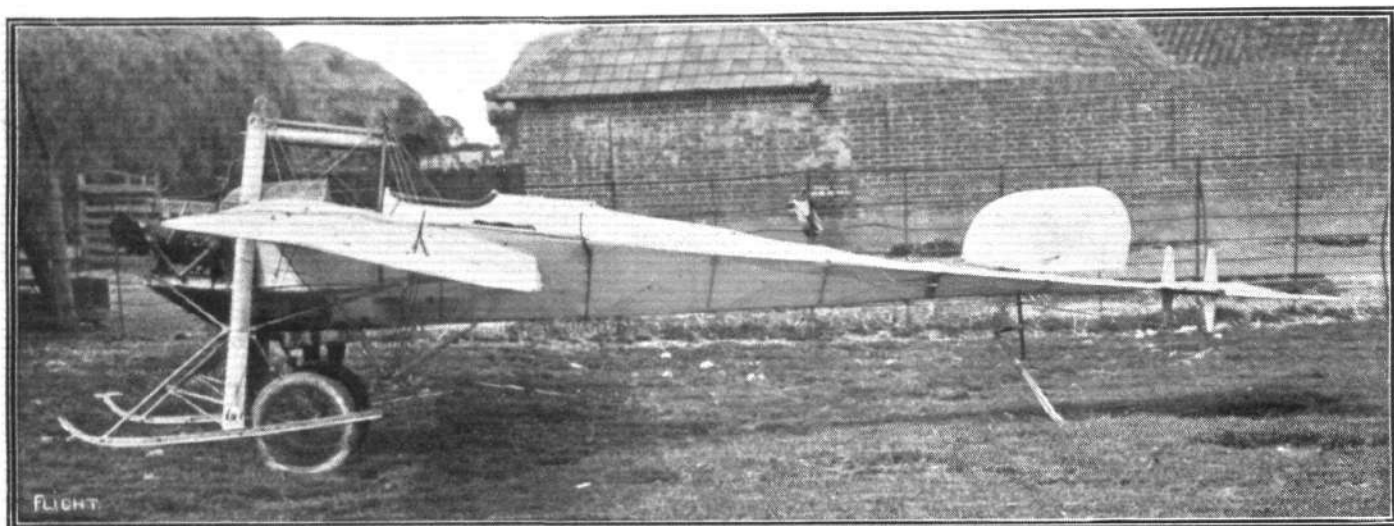
It will be noticed that the rudder is situated wholly on top of the *empennage* and is unusual in that its axis is forwardly inclined instead of being, as is general practice, at right angles to the line of flight. The effect of thus inclining the axis of the rudder is such as to make it act in a certain measure as an elevator so that, in turning, the tail of the machine will rise, thereby causing the machine to dive slightly without using the elevator. This is a great advantage, especially for school work, as most pupils are apt to forget to get the nose of the machine down when making a turn.

The chassis consists of two pairs of *A* struts, the apex of which forms the *cabane*, and which carry at their lower extremities a pair of skids from which the tubular wheel axle is sprung by means of rubber shock absorbers. Attachment of the chassis to the *fuselage* is effected by means of steel clips, which grip the *longerons* so that in no instance are these weakened by piercing. The chassis is of such simple construction, that should it

The new wings are to have two spars in the usual way, the rear one of which will be situated about halfway along the chord, and a third one further back will serve to distribute the pull on the wires over all the ribs. In the present monoplane the *ailerons* may be worked in a similar way, either together or independently, and may be both raised upwards to form what is virtually negative wing tips.

The next machine it is hoped will possess, due to its variable angle of incidence, a very wide speed range which, of course, is a great advantage as it enables the machine to land at a speed very much below its normal flying speed. This feature impresses one as being of special value for waterplanes, as it would greatly lessen the shock of the floats coming in contact with the water.

As the present machine is fitted with an engine of only 18 h.p. which, as a matter of fact, was built by Mr. Westlake himself from four De Dion air-cooled cylinders, no extended flights have been made, but Mr. Westlake has



Side view of the Westlake monoplane.

"Flight" Copyright.

become damaged through a heavy landing, it could be repaired with almost any material available, such as plain boards or planks. The advantages of this in a Military machine are obvious. The present machine, which is a purely experimental one, is fitted with *ailerons*, but the next machine will be fitted with warping, which however will be of an unusual nature in that both wings may be warped together so as to increase the angle of incidence and, incidentally, the camber, or they may be warped as in present systems, one moving up when the other moves down, or both may be moved down simultaneously, or again one may be left neutral while the other is warped.

The method of carrying out all these operations by means of a single lever is shown in one of the accompanying sketches, which is, we think, self explanatory. In the sketch only two cables are shown running to the wings, but any required number may be fitted by interposing compensation devices, such as pulleys in the cables.

The Matinee for the Cody Fund.

THE matinee which is being organised on Tuesday at the London Hippodrome in aid of the Cody Fund is progressing splendidly, and looks like being a big function. All sorts and conditions are supporting this effort, both amongst the general public and the theatrical world, so that a unique entertainment is likely to result for those who are able to get seats for the show. Quite a number of prominent aviators are likely to be present to support the cause of their brother pilot. Those who are wishful to secure seats should see that they book them without delay.

got several straights out of it, and no doubt, with an engine of more reasonable power, the machine would fly quite well.

For the exploitation of his patents Mr. Westlake has formed a limited company under the title of The East Anglian Aviation Co., Ltd., with which Mr. Arthur Elliott, the West-End estate agent, is associated. The London offices of the company are at 26, Shaftesbury Avenue, but the works and flying ground will be at Clacton-on-Sea, where a very large tract of land has been acquired, which is, we understand, absolutely flat and sheltered from north and easterly winds, and having moreover the advantage of a sandy, sloping foreshore, which should be excellent for waterplane practice. As the locality of the aerodrome is within a few miles of the military town of Colchester and the naval depôt at Harwich, a school at Clacton-on-Sea should soon become popular among the officers stationed at these two centres.

To Help the Cody Fund.

AN excellent idea was started last week by Mr. Salmel in connection with his flights on the coast. Like other aviators, his popularity entails affixing his signature to hundreds of postcards and other forms of mementos, a pretty arduous task, necessitating sometimes an hour or two's work. With the idea of turning this to account, he made it a condition that these autograph collectors should place a penny in the box for the benefit of the Cody Memorial Fund, with the result that he is now beginning to pull in quite a nice little amount to swell the collection for this good cause.

FLYING AT HENDON.

OWING to the strong wind (about 35 m.p.h.) only one of the events down on the programme for the September Meeting took place at Hendon last Saturday, but the finish for this event—the cross-country handicap—more than made up for the cancellation of the speed handicap, for it was one of the finest finishes to a cross-country race that has been seen at Hendon. The course was over the four-lap Bittacy Hill and back circuit, in which the competing machines are in view the whole time, the total distance being about 16 miles. Six pilots and their machines lined up for the start, and got away in the following order:—R. H. Carr on the 50 h.p. Grahame-White biplane (11 mins. 30 secs. start), Marcus D. Manton on the new type 50 h.p. "G.-W." bus (10 mins.), Lewis Turner on the 60 h.p. Caudron (5 mins. 50 secs.), Pierre Verrier on the Aircraft-Maurice Farman (3 mins. 35 secs.), Robert Slack, Blériot (30 secs.) and Philippe Marty (scratch), Morane-Saulnier monoplane. It was, of course, difficult to judge the relative positions of the competitors during the first two laps, owing to the length of the handicaps, but afterwards all except Carr and Turner, who had retired, drew close together. On the homeward journey Manton was leading, with Marty coming up behind at a rapid pace, the two drawing level five yards in front of the finishing line, and Marty crossing the line first one-fifth of a second ahead of Manton. Verrier came in third some 26 seconds after Manton, whilst Slack retired just before the finish. The result of this race is given in detail as under:—

Cross-Country Handicap. (16 miles.)

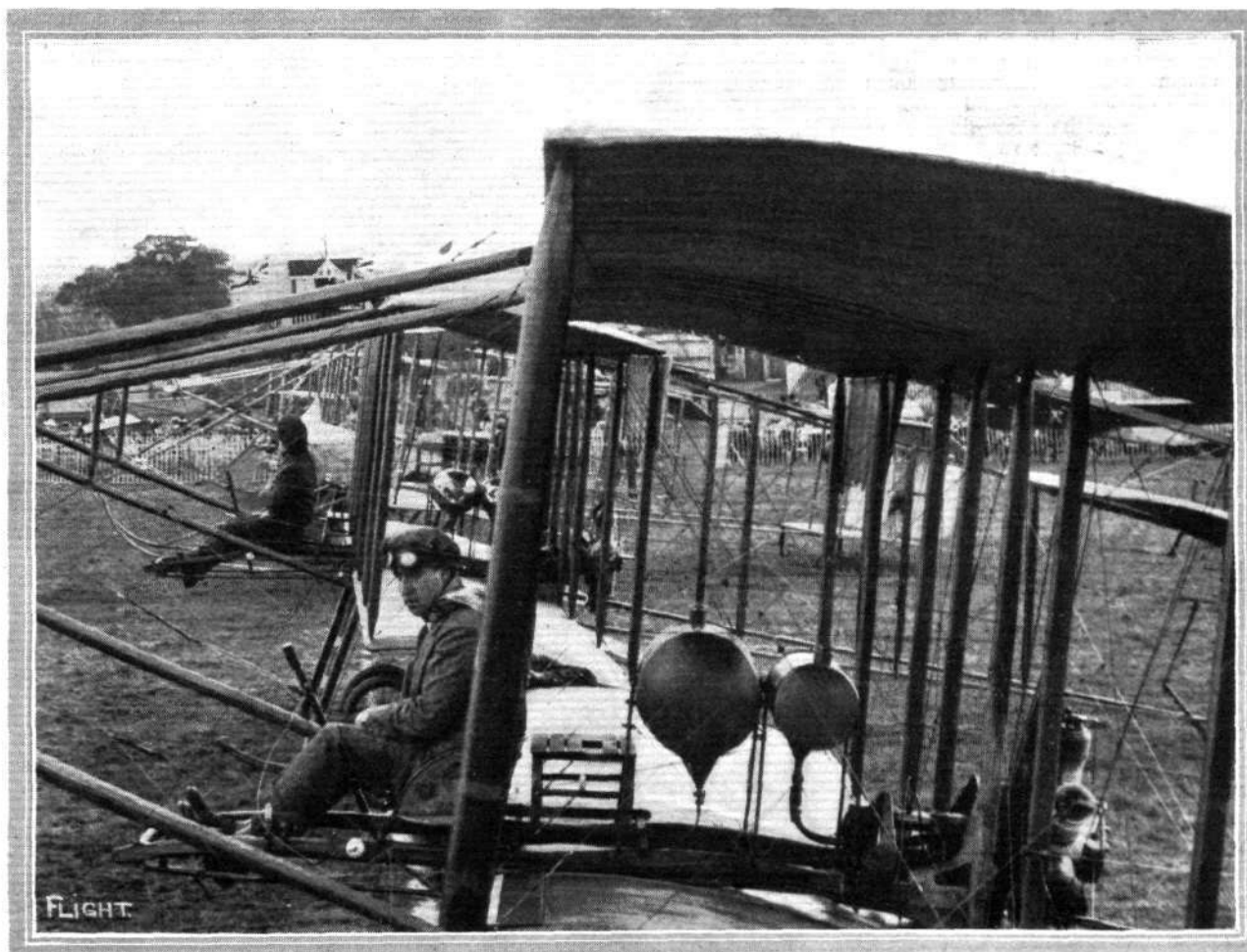
	Start.	Handicap
	m. s.	m. s.
1. Philippe Marty (50 h.p. Morane-Saulnier monoplane) scratch		29 11
2. M. D. Manton (50 h.p. Grahame-White biplane) 10 0		29 11½
3. P. Verrier (70 h.p. Maurice Farman biplane) 3 35		29 38

In addition to the above race, numerous exhibition flights were made by Geo. W. Beatty on his 50 h.p. Gyro-Wright, Carr and Manton on "G.-W." buses, Marty on the Morane-Saulnier,



Photo by C. Warren.

A couple of biplanes at Hendon Aerodrome, passing each other in mid air.



"Flight" Copyright.

How the starter sees the competing machines in line from his box at Hendon Aerodrome.—Ready for the Cross-Country Handicap.

Turner on the Caudron, and Verrier on the Maurice Farman. Some excitement was caused at the conclusion of the cross-country race by the arrival of Capt. Fox, R.F.C., and Lieut. Porte on a two-seater Blériot piloted by the former. They had come from Farnborough, having left there at 4.20 p.m. and arriving in the aerodrome at about 5.30 p.m.; their flying altitude was about 2,500 feet. On landing in the centre of the aerodrome the right wheel caught in a rut and buckled, causing the monoplane to strike the ground with the right wing-tip, with consequent injury to the same, but fortunately without harm to either pilot or passenger. At the close of the evening, further trials were made with the "G.-W." char-à-banc, Louis Noel making a highly successful flight with two passengers. Several representatives of the Japanese Navy paid a visit to the aerodrome during the afternoon, and besides witnessing the cross-country race and exhibition flights, made an inspection of the machines and hangars under the "pilotage" of Mr. Claude

Grahame-White. A welcome and notable visitor was also to be seen in Mr. Harry Hawker, who, however, did not fly.

On Sunday the weather was much brighter, though still windy, and there was, as usual, a very good attendance and display of flying. Those who contributed to the afternoon's entertainment were:—Geo. W. Beatty on the Gyro-Wright, R. H. Carr and Marcus D. Manton on "G.-W." buses, P. Marty and Robert Slack on Morane-Saulnier monoplanes, Lewis Turner on the Caudron, and P. Verrier on the Aircraft-Maurice Farman. Noel again brought out the "G.-W." char-à-banc, and made a flight with Mr. W. Law, of the "G.-W." works, as passenger. It was with very great pleasure we saw young Marcel Desoutter at the aerodrome again, looking remarkably well and walking about with ease. He seems to have quite recovered from his accident, which deprived him of his left leg, and now he affirms it will not be long before we shall see him in charge of an aerial steed.



M. PEGOUD'S BLÉRIOT EXPERIMENTS.

THE following valuable and interesting communication upon the above has been received from Mr. Norbert Chereau:—

"After reading the 'Corkscrew Twist' in FLIGHT of last week, I am afraid that the idea of the valuable experiments now carried out on the Blériot monoplane by M. Pegoud has not quite been grasped, and although it may be said that 'it is a sensational stunt of an uncommonly daring order,' I would like to add that it has not been done simply with the idea of making a stunt or astonishing the world, but with the set purpose of demonstrating that, should through any cause whatever this monoplane be turned upside down at a good height, the pilot need not lose his head or have the awful sensation that probably all is over, but that on the contrary he has simply to use his controls to come back to the normal position of flight without fear or the thought that the monoplane will not obey immediately, and the pilots, particularly the officers, who were present at the second experiment were most emphatic in their praise of M. Pegoud for having demonstrated this fact, which up to then was recognised both by M. Blériot and M. Pegoud to be theoretically practical, but had never been attempted before.

"I may also add that it was at the instance of M. Pegoud that M. Blériot consented to let him try this extraordinary feat. M. Blériot hesitated for a long time, not because he did not think that the monoplane would answer readily enough, and stand the test, but because he had the very natural apprehension that the pilot might lose his nerve when he was upside down, but M. Pegoud felt so sure of himself, and insisted so much that in the end M. Blériot gave way, and had the machine prepared for him.

"This machine was an ordinary Blériot monoplane of the XI single-seater type built in 1912, the positions and height of the upper cabane being slightly modified, and the bracing of the fixed tail plane reinforced.

"Some newspapers, I know, described the feat under all sorts of names, but what actually took place was this: When at a height of 3,300 feet, M. Pegoud deliberately stopped the engine, and put the nose of the monoplane down starting a descent as nearly as possible on the 'vertical,' and when at about 1,600 ft. pulled his 'cloche' and gradually brought the machine on its back without twisting it or making a corkscrew. The machine started then what we might call a very flat *vol plané* on its back, and continued in

that position for about 500 yards coming down gradually meanwhile. At that moment the pilot pulled his 'cloche' and the machine assumed again by degrees a vertical position, which it kept for a few seconds only, and gently came back to the ordinary position of flight, after which M. Pegoud indulged in all sorts of twists and stunts before alighting.

"This was done on the morning of Sept. 1st at Juvisy, and repeated on Sept. 2nd at the Blériot ground at Buc. There is consequently no question of centrifugal force helping to keep the man in the machine; on the contrary, the pilot was on the wrong side of the machine for this effect.

"It is, therefore, quite clear that he could not have performed this act without the braces, and he did not mention that he could do so. I have made special enquiries on this point.

"The new trials that are intended, and may have been carried out by the time this appears, are the reversing of the machine upside down, sideways—i.e., pivoting round the centre line of the fuselage (this might be called the corkscrew) to show that with the perfection of the present controls of the Blériot monoplane a 'side slip' or even 'the capsizing' of the monoplane at a sufficient height need not be considered as fatal, but that provided the pilot keeps cool, the monoplane can be brought back to its normal position by ordinary manœuvring of the controls.

"Besides the splendid performance of M. Pegoud, who had absolute confidence in his machine, the experiments have proved that the Blériot monoplane must be very seriously and strongly constructed to go through such hard tests, and that no small part of the achievement is due to M. Blériot for the design of such a splendid machine.

"It is quite possible that the experiments may be repeated with a 'tandem Blériot,' and already several of those who witnessed the performance of M. Pegoud have offered to accompany him.

"It may be also that a little later M. Pegoud might attempt the 'looping the loop,' but that of course is quite another story, and would be performed the reverse way—that is, with the pilot's head toward the centre of the circles to be described by the machine; but this will be purely a stunt, and will not have the same value as the feat reported above."



STRINGFELLOW MEMORIAL AT CHARD.

WE have received a letter from Mr. James Gillingham of Chard, inviting contributions to the fund for keeping in repair and making some improvements to the memorial stone above Stringfellow's tomb in Chard cemetery, and also in respect to a tablet that has been placed over John Stringfellow's residence.

We do not need to remind readers of FLIGHT, that John Stringfellow was the first man to make a power driven aeroplane support its own weight. His success was attained with a large model fitted with a very ingenious small steam engine. The first successful trial took place in 1848 with a twin propeller monoplane.

It is very fitting and proper that Stringfellow's memory should be suitably recorded at Chard, and present-day aviators who are flying machines so like that which Stringfellow designed will doubtless wish to pay their tribute to this pioneer British designer.

The expenses outstanding amount only to about £6 at the present time, but should any surplus accrue from the subscriptions now given it is proposed to mark the site on the down near Chard where Stringfellow and Henson at one time carried on their experiments.

Subscriptions may be sent direct to Mr. James Gillingham, Prospect House, Chard, Somerset.

THE CURTISS BOOK.

IN view of Mr. Curtiss's visit to Europe, no doubt there will be many of our readers who will make a point of perusing the above-named book, in which Mr. Curtiss, in collaboration with Mr. Augustus Post, has set forth the story of the development of the Curtiss biplane and flying boats, and incidentally the history of Mr. Curtiss, who, before he became associated with Dr. Graham Bell and the Aerial Experiment Association, was a successful racing motor cyclist. It may be recalled that the Aerial Experiment Association was made up of Dr. Graham Bell, Lieut. T. Selfridge, who lost his life while flying with Orville Wright, F. W. Baldwin, J. A. D. McCurdy, Glenn Curtiss, and Augustus Post. They built the "White Wing," "Red Wing," and "June Bug" biplanes, which successfully flew, and the last-mentioned, fitted with floats and renamed the "Loon," flew over Lake Keuka in November, 1908, the first recorded flight with a hydro-aeroplane.

The book also includes chapters on the Aeroplane for the Army by Capt. Paul W. Beck and the Aeroplane for the Navy by Lieut. T. G. Ellyson, while Hugh Robinson has written a chapter on hydro-aeroplaning. The book is profusely illustrated by photographs.—(Grant Richards, Ltd. 6s.)

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Competitions Committee.

A MEETING of the Competitions Committee was held on Tuesday last, the 9th inst., when there were present: Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. G. B. Cockburn, Capt. A. E. Davidson, R.E., Maj. F. Lindsay Lloyd, Mr. Alec Ogilvie, and the Secretary.

Mr. F. K. McClean and Mr. T. O. M. Sopwith attended at the invitation of the Committee.

Daily Mail £5,000 Race. Circuit of Britain, 1914.—The Committee discussed the regulations for the Race for next year, and the Secretary was instructed to place the views of the Committee before the Proprietors of the *Daily Mail*.

Public Safety and Accidents Investigation Committee.

A meeting of the Public Safety and Accidents Investigation Committee was held at the Royal Automobile Club (by kind permission) on Tuesday last, the 9th instant, when there were present:—Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. A. E. Berriman, Eng. Lieut. E. F. Briggs, R.N., Mr. G. B. Cockburn, Mr. F. K. McClean, Mr. W. O. Manning, Mr. Alec Ogilvie, Maj.-General R. M. Ruck, C.B., R.E., and the Secretary.

Fatal Accident to Mr. S. F. Cody.—The Committee received

the report of the Club's representatives who visited the scene of the accident, and also the evidence of the eye-witness.

The report of the Committee was drawn up and ordered to be submitted to the Executive Committee at its next meeting.

Breguet Accident at Bray.—The Committee received the report of the Club's representatives who visited the scene of the accident. The enquiry was adjourned for further evidence.

Aviator's Certificate.

The following Aviator's Certificate, granted by the Committee at its meeting on the 2nd inst., was omitted from the list published last week:—

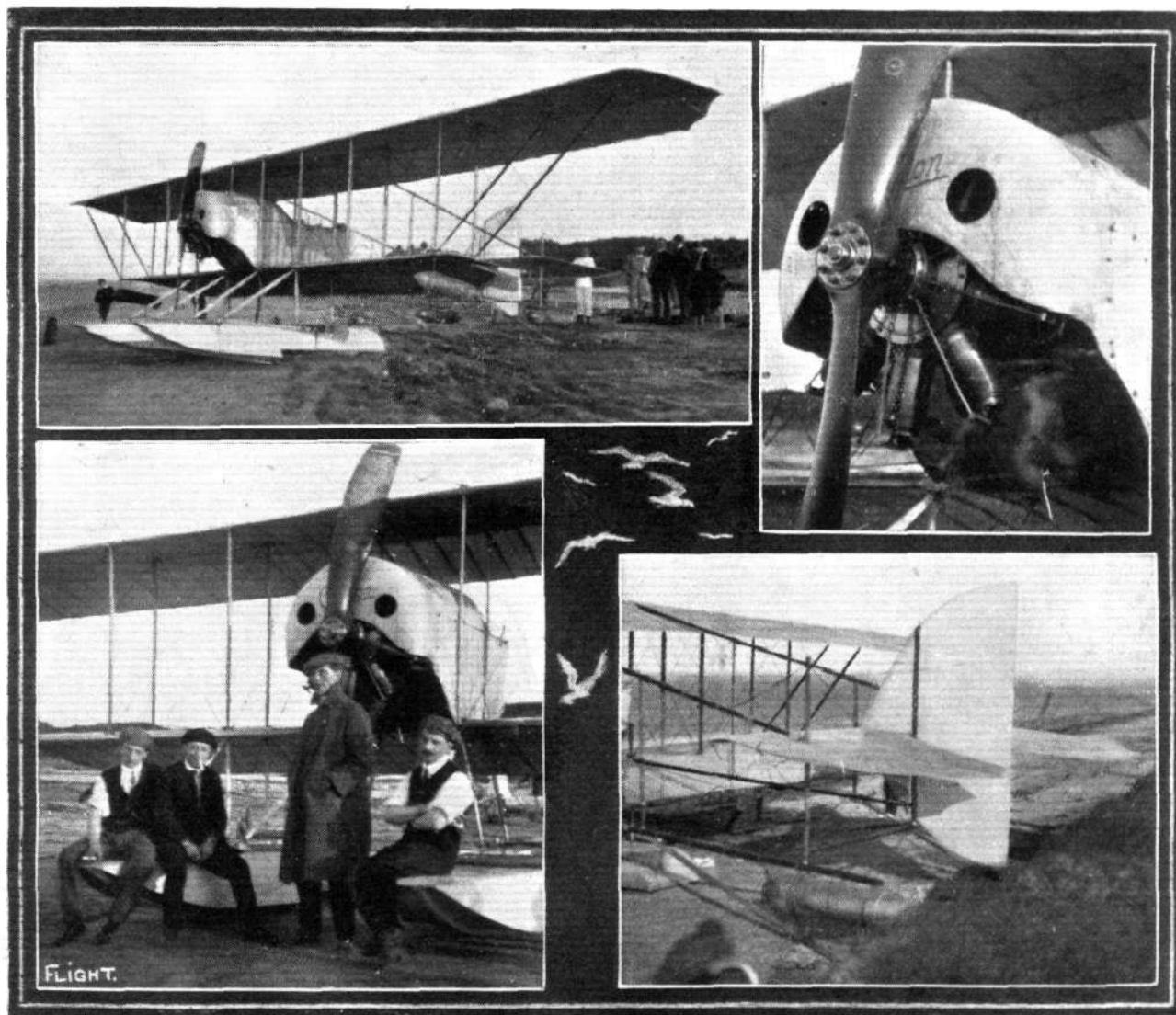
588 Hereward de Havilland (Caulron Biplane, Ewen School, Hendon), August 13th, 1913.

British Empire Michelin Competitions £800 and £500.

Intending competitors are reminded that these prizes are now open for competition, and full particulars can be obtained on application to the Club. The closing dates are:—

British Empire Michelin No. 1, £500 ...	October 31st, 1913.
" " 2, £800 ...	October 15th, 1913.

166, Piccadilly, W. HAROLD E. PERRIN, Secretary.



"Flight" Copyright.

Four views of the latest Caudron seaplane, taken at Leysdown on the occasion when Mr. Ewen himself delivered the machine at Grain Island some little time back. It is the same machine that Sydney Pickles flew across the Channel accompanied by his mother, and is fitted with the new 9-cyl, 100 h.p. Gnome.

ARMCHAIR REFLECTIONS.

By THE DREAMER.

"Aviators' Worst Moments."

THE above heading is not mine. If you look closely you will see I have put it in "quotes": it is the heading of an article in the *Derby Daily Express*, and the subtitle is "Thrilling Stories by Leading Flying Men." Perverse! that's what I am; I never will see things as it is wished that I should see them. I know quite well that the writer wishes me to understand that what he has portrayed there, is the worst moments these several airmen have experienced, but I won't: my impression is that their worst moments were when they read his article.

Here are some extracts:—

"Instead of the quiet hum of the motor he suddenly heard a fearful crackling sound. He realised that his machine had lost its equilibrium, and feared the worst." Now you pilots; you can take that little piece of string off; there is no longer any need to have to sit and watch it to know if you have lost your equilibrium; when you have, you will hear a crackling sound, and—I suppose, fear the worst; but there is no need, it may all come right yet; read on:—"Perspiration stood in beads on my forehead, and my heart began that cold, hard beating which shows better than any theory how simple instinct can herald the real moment of danger." Now here I admit our worthy friend has got me. I can't attempt to unravel all this, but it seems to me, that if pilots would only cultivate the habit of cold, hard beating hearts, and simple instinct to warn them of danger, they could do away with both the String and the Crackling sound. "Luckily I had the happy inspiration to switch off my sparking apparatus. After some unnerving movements the motor came to a standstill."

See? If your motor starts doing unnerving movements, such as, I suppose, jumping in and out the engine housing, or doing three-four rag-time "revs." three to the right, and four back, half-chain, set and turn partners; don't be unnerved; have a happy inspiration, and switch off your sparking apparatus. "Then the question arose how to make that descent" (there's antithesis for you) "of 5,000 metres" . . . "I went down as slowly as I could, and absolute success crowned my efforts."

The above is supposed to be what Garros said, but I really think—well, I am perverse.

The Corkscrew Twist.

I cannot, of course, let the famous flying of M. Pegoud pass without having something to say about it. I am not at all sure what it is he does—whether it is "looping the loop" or "twisting the twist" but I am quite sure that it is silly, that it is useless, that it results in nothing good to the art of navigating the air, that anyone could do it, and that it is not a question of nerve. Now having put myself in this hole, I must proceed to dig myself out.

I will first take the question of nerve. There is not much doubt, that amongst the huge population on this earth, there are some, so constituted, in whose brains there is an absence of that part governing the sense of fear of things that might hurt physically. It is well known to those who have been in action, that there are men who will place themselves deliberately in danger, and that without any good reason. Men have been known to stand up in a trench and have a good look round, when the bullets were flying in sheets, and when it was almost certain

death to raise one's eyes above the earth-work. I do not think that this can be taken as bravery, because when spoken to about it, they have disclaimed any idea that there was any danger; and anyway there was nothing to gain, whereby a man should risk his life. That particular man did not see anything in it, because his brain was deficient in the particular part above mentioned. It is quite a different thing, when a man volunteers to cross a bullet swept zone, at almost certain destruction to himself, to fetch water for his dying comrades. That man knows the risk he is running, but takes it for the sake of his wounded comrades, and because he thinks there is just a chance of getting through. So far as "looping the loop" is concerned, it seems to me but a question of speed. If sufficient speed is obtained, and the circle is made so small that the machine has no chance of entirely losing momentum on the upward half, there is no reason why it could not be done every time, but what good is it?

If it is a "corkscrew twist," after the manner of a shark turning in the sea, again there is not much in it beyond speed. I am of opinion that any fast monoplane brought down from a height at an angle of even 45° could, by putting the warp hard over and keeping it there and so, as it were, turning it into a screw, be made to rotate screw-wise and, provided the pilot did not become giddy and so not know whether he was upside down or not, be brought on to an even keel with ease. But, again, what good is it?

If there is anything at all that it teaches, it is, to my mind, that of encouraging pilots never to lose hope in a seeming coming smash, but to hang on and try to wriggle out of it up to the last moment. Machines have been known to turn upside down and right themselves. Machines have turned upside down and floated to earth that way without much damage; and there is always the famous dive of the late Lieut. Parke at Salisbury. I should call it nerve when a man sits coolly there and works his controls when all seems hopeless.

I have nothing to say against M. Blériot and his pilot M. Pegoud. If they continue their investigations they will no doubt find out a good deal that will be of great use to aviation. The pity of it is that the general Press should make such a god of the pilot and laud his doings to the skies, as it is likely to make others think that the way to make a name as a clever pilot is to do all sorts of monkey tricks in the air, whereas it is undoubtedly the quickest possible way to a horrible smash. The main purpose of an aeroplane is to take one somewhere and bring one back in safety, with the ability to fight through rough weather when necessary. Could we but get absolute reliability on an even keel, we could do without circus tricks.

The Portrait Album.

Here is a life story in dates for those who can read them. Yesterday I was passing through Farringdon Street. Farringdon Street has a great attraction for me on account of the stalls. I like to look at the curious things offered for sale.

Yesterday, on one of the stalls I saw an old-fashioned album, and in my curiosity I picked it up and turned over the leaves; much to my surprise it was nearly full of old photographs. Why they had been left there I cannot tell; probably being of no use except to the

original owner they were not worth the trouble of removing, and anyway, they might as well stay there as be taken out and destroyed.

I had not the slightest use for that album, I did not know the people there represented, and the book itself was old, and in a most dilapidated condition, and yet I bought it—I gave fourpence for it, and I took it home, and slowly, leaf by leaf, I pulled it to pieces and burned it. I burnt that book out of respect for the original owner; a family album full of portraits is sacred, and should have no place on a curio stall. One page I reserved till last. I could not at first bring myself to destroy it, yet with a sigh I had at last to add it to the now smouldering heap of ashes. It was the first page, a page yellow with age, and on it there was writing; a list,

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Mr. Edwin Prosser at Abergavenny.

LAST Saturday Mr. Prosser was flying in the hilly district around Abergavenny, one of the most interested spectators of his flights being the aged Marquis of Abergavenny, whose first actual experience it was of the vast progress made in aviation. During one of the flights Prosser had engine trouble, when about 1,500 feet up, but by careful pilotage he was able to reach the aviation ground from which he was making his flights.

a very short list of names; names of man, and woman and child, together with dates of births and deaths—two of them, and a whole sad history was revealed to me in that page. The writing was that of a woman—all but one entry, which was evidently that of a man; it was a date of death, and followed the name of the woman. I have altered the names, but to all intents and purposes it ran thus:—

John Hamilton. Born July 14th, 1847.

Annie Hamilton. Born April 9th, 1849; died March 1st, 1913.

John. Born February 4th, 1872; died March 17th; aged 6 weeks.

A sad little story, perhaps, but think it out for yourselves, it won't do you any harm.

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Naval and Military Engine Competition, 1914.

THE Secretary of the War Office announces that, in view of the difficulty in obtaining some of the parts of the magneto in the United Kingdom, the obligation for the magneto to be of British manufacture throughout will be waived.

Paragraph 10 of the regulations for competitors, which requires the production of evidence that all parts of the engine are of British manufacture, will be modified accordingly.



Another close-range photograph of a machine in flight taken from Pylon No. 1 at the Hendon Aerodrome.—The monoplane is a 100 h.p. "Dep.," which has been flown with such effect by Lieut. J. C. Porte, R.N. In the Speed Handicap on a recent Saturday, his winning finish, after a neck-to-neck race with the Morane monoplane, was one of the finest sights that the Hendon Aerodrome has ever provided its enthusiastic spectators. The Dep. was flying so low that twice its wing-tip scraped the grass at the corners. These photographs form quite an unique study of aeroplanes in flight, for they show the pilot at very close quarters and under perfectly normal conditions. The above machine is travelling at about 80 m.p.h., and the wing-tip is within about 12 ft. of the camera.

GYROSCOPIC ACTION.

WE continue to receive correspondence on the subject of the dangers of the gyroscopic couple in flight, and it may, perhaps, be interesting if we give our readers a specific numerical example on which they can base their criticisms and comment. We deprecate very strongly any attempt at spreading a general impression of danger without specific illustration of the cause, particularly since the report of the Monoplane Committee made a very definite statement to the effect that there is no reason for alarm. The case taken in the report is that of a 100-h.p. Gnome engine and propeller running at 1,200 revs. per min. on a machine that is supposed to describe a complete circle in 20 seconds. The speed of rotation of the engine is a quantity that can be assumed with accuracy. The rate of turning on the part of the machine is possibly a factor of less certainty, and it is on this latter point that any material difference of opinion must be centred.

It has been explained in the recent series of articles on stability and control that an aeroplane steers a circular course by virtue of the centripetal component of the wing pressure produced by canting the machine. Assuming the turn to be accomplished at the normal flying speed, the magnitude of the centripetal force is governed solely by the amount of banking. The greater the bank, the greater the centripetal force, the shorter the radius and the less the time required to make a complete circle.

The bank is thus a factor in the problem that may to some extent serve as a guide for the limiting case. For example, let us take a flight-speed of 70 miles an hour, and assume that the circle is completed in 20 seconds. The relationship between radius, circumference, velocity and time shows that the radius of the circle that can be completed in 20 seconds at 70 miles an hour is 330 feet. Similarly, the relationship between force, mass, and acceleration, shows that the force required to produce the centripetal acceleration represented by motion in a circle of 330 feet radius at 70 miles an hour is approximately equal to the weight of the machine.

The centripetal force is, therefore, equal to the vertical force supporting the weight, and it is hardly necessary to draw a diagram of forces in order to illustrate that this is produced by a bank of 45°. A bank of 45° is a very fair amount for the average pilot, for it is not everyone who chooses to fly in the attitudes occasionally assumed by Hamel and Chevillard. Our main point, however, is that anyone who bases an argument on the dangers of gyroscopic force by supposing that the machine turns in much less time than this, must be careful to work out the corresponding bank required, and also be prepared to say that it is a feasible quantity.



The Wight Seaplane Again in the Air.

ON Monday afternoon Mr. Gordon England was again demonstrating the flying qualities of the Wight seaplane in the Solent, remaining in the air for about half an hour, meantime gracefully flying over and about the yachts in the roadstead. On Tuesday, the Wight, fully loaded, was up nearly all day, and climbed 3,000 ft. to the low clouds. The behaviour of the floats both on leaving and alighting on the water appears to be good.

"Tellier" Floats for the British Empire.

From the Aircraft Co., of 47, Victoria Street, we learn that the sole rights of the above famous floats have been acquired by them for the whole of the British Empire. M. Tellier, who is probably one of the most renowned boat builders of the world, has for some time been constructing large quantities of these floats, most of which are employed on waterplanes in France. The new arrangement is actually between the Aircraft Co., Tellier, and Fabre,

The case for steering in a vertical plane is also subject to considerations of a limiting character. Thus, for example, it is not to be readily supposed that a pilot will voluntarily initiate a dive so suddenly as to throw himself out of his seat. The radius of the circle representing the machine's path must not, therefore, be such as to cause the centrifugal force to exceed the weight. Otherwise, top pressure will be necessary on the wings, and the machine as a whole will tend to descend from beneath the pilot's body.

We have seen in the preceding example that the centrifugal force is equal to the weight when the machine flies at 70 miles an hour about a radius of 330 ft. The conditions for turning in the horizontal and vertical planes are, therefore, more or less of the same numerical value, as is pointed out on page 10 of the Monoplane Committee's Report.

Having established a plausible time factor for the turning circle, it is a simple matter to calculate the gyroscopic couple for a known engine and propeller, by the formula $M = m \lambda^2 \omega \Omega$, where m is the mass, λ is the radius of its gyration, ω is the angular velocity of its rotation, and Ω is the precession or angular velocity of the displaced axis.

In the absence of exact figures, we will suppose the engine to weigh 280 lbs., and to have a radius of gyration of 8½ ins. Corresponding figures for the propeller we will suppose to be 32 lbs. and 2 ft. 6 ins. respectively. The couple in the case of the engine rotating at 1,200 r.p.m. works out at 170 pound-feet, while the propeller gives 240 pound-feet.

The superiority of the propeller effect is most interesting and important, because the propeller will be a factor to be considered on any machine, whether or not it has a rotating engine. The total couple is 410 pound-feet, and we will suppose that this has to be dealt with by some organ of control, such as the elevator or the rudder, situated at a radius of 20 feet from the point about which the machine pitches or slews.

When a machine is steering to the right or left, the gyroscopic reaction makes itself felt as pitching; conversely if a change of direction on the part of the machine takes place in a vertical plane, the reaction is in the nature of a swerve.

If we assume that the rudder or the elevator has an area of only 10 sq. ft., the pressure required to counteract the gyroscopic couple is only 2 lbs. per sq. ft., which can hardly be called an alarming amount, particularly as it is a force against which the pilot is forewarned.



who are working together in this respect, M. Fabre being one of the earliest pioneers in experiments with hydro-aeroplanes. His knowledge of floats, combined with Tellier's experience in fast motor boat building, has brought about a very fine result. The two Maurice Farmans which shared the honours of the Deauville meeting, as also the Breguets, Deperdussin, &c., were equipped with these floats. We understand that the Aircraft Co. are prepared, not only to supply floats on the Tellier-Fabre principle to constructors, but also to issue licence to constructors of waterplanes, to build themselves. It may be noticed that M. Fabre has an early patent in the position of floats, for the use of which nearly all French constructors pay a small fee. This patent has also been acquired by the Aircraft Co. As it is recognized that Tellier floats stand up well to their work, if the results of M. Fabre's experiments can be obtained from the Aircraft Co. in exchange for a small fee, there is little doubt but that much trouble and expense may be saved to waterplane builders.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

Heavy rain and strong winds throughout last week resulted in little out-door work being done at the different schools.

On Saturday at mid-day Mr. Hawker left for Eastchurch, with Mr. Simms as passenger, to deliver one of the machines ordered by the Admiralty, but on reaching an altitude of 1,500 ft. it was so



Capt. B. C. Fairfax, who took his *brevet* on a Vickers biplane at Brooklands on July 26th, in very good style.

misty that the pilot lost his bearings, and a descent was made at Cheam. Mr. Hawker decided to return to Brooklands, but got lost in the mist again on the return journey, and landed to find himself at Guildford, whence he easily got back to Brooklands. Mr. Raynham flew in from Hounslow on the Avro biplane.



Capt. Charlton, who, on August 29th, took his *brevet* in first-class style, his turns being specially small, on a Vickers biplane at Brooklands.

On Sunday, notwithstanding the threatening weather and gusty wind, a large number of people turned up to see the hero of the Round-Britain Waterplane Race organised by the *Daily Mail*, who was kept busy by his numerous admirers in writing his autograph in their books. The winner of the ballot for the free passenger flight—Mr. J. S. Marsh, of Birley Edge, Wadsley Bridge—was taken up by Mr. Hawker, who took up a number of other passengers, and gave some very fine exhibition flights, handling his Sopwith machine in a masterly manner, and making many graceful spiral descents. Mr. Raynham on the Avro biplane also put up some excellent flights with well-judged landings. Mr. Dukinfield Jones was testing the Flanders biplane.

Vickers School.—Monday morning last week, Knight test on biplane 20, then with Capt. Ellis and Lieut. Sherlock. Paterson on No. 5 mono., then Mr. Newton-Clare straights. Barnwell test on No. 3 mono., then Lieut. Styles straights. Barnwell on No. 5 mono.

In morning, Wednesday, Barnwell test on biplane 20, then with Lieut. Sherlock and Capt. Ellis. Paterson with Messrs. Haskins and Addis. Knight test on No. 3 mono., Lieut. Styles straights. Knight on biplane 20 with Messrs. Apps and Wynne-Roberts. Barnwell test on No. 5 mono., Mr. Elsdon and Mr. Newton-Clare straights. Barnwell testing biplane 21 with passenger. In evening Knight on biplane 20 with Lieut. Sherlock, Mr. Haskins and Mr. Addis. Mr. Apps and Capt. Ellis solo straights. Barnwell test on No. 5 mono., then Mr. Newton-Clare first circuits, doing very well. Paterson test on No. 3 mono., then Mr. Joubert de la Ferte straights.

Thursday afternoon, Barnwell test flight on Blériot in bumpy wind.

Eastbourne Aerodrome.

On Tuesday evening last week Gassler was giving exhibitions, Wednesday was blank, but school work started on Thursday morning at dawn. Gassler was out with Messrs. Hunt, Thornley, and Lieut. Oxlade, going up with each twice. Fowler then went up with Lieut. Oxlade and Mr. Hunt. Mr. Fill was also out on the 35 Blériot. In the evening Gassler went up three times, but the weather was not fit for teaching. On Friday morning Gassler was testing the E.A.C. biplane at daybreak, then Messrs. Thornley, Hunt, and Lieut. Oxlade each received two lessons, all three making right hand turns and figure eights. In the evening, after Gassler had tested the Bristol, he went up with Mr. Thornley, and



Capt. C. Downer, who also secured his Royal Aero Club certificate in excellent style on August 29th, at Brooklands on a Vickers biplane.

Lieuts. Oxlade and Playfair. Saturday morning Gassler test flight, Mr. Hunt twice, Lieut. Oxlade twice, and Mr. Thornley twice. Bad weather prevented anything further until Monday morning, when Gassler had Messrs. Hunt, Thornley, and Lieut. Oxlade up twice each. Another spell of rain and wind followed. Tuesday morning was a repetition of Monday. Fowler was busy all the week passenger carrying on the H. F. waterplane.

London Aerodrome. Collindale Avenue, Hendon.

Hall's School.—Very little doing last week. Sunday and Monday poured with rain. Wednesday, Scotland, out in evening, managed to put in three straights before wind rose again. Wind too strong for school Thursday. Friday poured with rain. Saturday, wind still too strong.

Salisbury Plain.

Bristol School.—Monday last week, no flying all day, rain and wind rendering it impossible.

Rain all Tuesday morning. Pixton and Jullerot with passengers for trials in the evening, but too bad for school work.

Flying impossible all Wednesday morning, rain and wind. Pixton trial about 4 o'clock with Mr. Voigt. Jullerot trial later, then with Air-Mechanic Locker and Asst.-Paymaster Coles. Pixton with Capt. Hay. Good solos by Capt. Ferguson, Lieut. Spence, Lieut. Jenkins, Mr. Courtney and Mr. Voigt, two flights each, the latter pupil making a fine *vol plané* from 300 ft., with engine stopped.

Thursday, rain and wind prevented flying all day.

Friday, yet another impossible day, pouring rain throughout.

Saturday, rain pouring all day. Stopped towards evening, but strong wind rendered tuition work futile.

Royal Flying Corps. 3rd and 4th Squadrons (Netheravon).—

During the past week the weather has been a nightmare, rendering flying impossible, so that things have been very quiet with work in the air. In last week's report, the passenger flight given by Capt. Herbert was to Mechanic Walland, not Wadham, as printed.



Mr. Blackburn at Harrogate.

FOR the past week Mr. Harold Blackburn has been flying with Dr. Christie at Harrogate, on the latter's 80 h.p. Blackburn monoplane. On Saturday afternoon, Mr. Blackburn took two or three passengers for short flights. On Sunday, Blackburn and Christie flew to Ripon, where they gave a pretty show of fancy flying. They returned to Harrogate later in the afternoon, and made a beautiful descent on the Stray.



Lord Edward Grosvenor, who has just passed his certificate tests in a most skilful manner at the Bristol School at Brooklands under the tuition of Mr. F. W. Merriam. Lord Edward went right through his course of tuition without even breaking a wire, and during his tests made a splendid *vol plané* landing.



Lord George Wellesley who has just gained his *brevet* at the Bristol School, Salisbury Plain, flying throughout in excellent form.

THE AERIAL DERBY AT HENDON.

SATURDAY next week should be a greater day even than usual for the Hendon Aerodrome, as, subject to "impossible weather" prevailing, the Aerial Derby will be run off between some of the best flyers in the country, starting at 4 p.m. Next week we shall be giving fuller details of this splendid sporting fixture, so that our readers may be able to easily follow the aviators in the competition from any point of the course round London. In the meantime, it might be noted that starting from Hendon the various turning points taken in a straight line from point to point are at Kempton Park (14 miles), Epsom Race Course (10 miles), West Thurrock (26½ miles), Epping (17½ miles), Hertford (10½ miles), and back to the London Aerodrome (16 miles), a total of 94½ miles. En route there will be opportunity for millions of people to observe the flying, and there is little doubt that full advantage will be taken of this chance of seeing some of our best pilots and machines matched against one another in what it is hoped will be an annual fixture for many years to come.

In addition to the *Daily Mail* Gold Cup and 200 sovs. for the winner, there will be a sealed handicap for the "Shell" trophy and 200 sovs. It is anticipated that at least 20 well-known British and Continental airmen will compete. Already a goodly number of entries have been received, including the following:—H. G. Hawker, 80 h.p. Sopwith; Gustav Hamel, 80 h.p. Morane-Saulnier; B. C. Hicks, 80 h.p. Blériot; G. Lee Temple, 50 h.p. Blériot; Robert Slack, 80 h.p. Morane-Saulnier; M. D. Manton, 50 h.p. Grahame-White; Louis Noel, 120 h.p. Grahame-White 5-seater biplane; P. Marty, 50 h.p. Morane-Saulnier; Pierre Verrier, 80 h.p. Farman; W. L. Brock, 80 h.p. Morane-Saulnier; Lieut. Porte, 110 h.p. Deperdussin; J. L. Hall, 50 h.p. Blériot.



Verrier Flies to London.

M. VERRIER, on Thursday last week, accompanied by Max Bruyere of the French *L'Aéro* as passenger, on an 80 h.p. Gnome-Farman, started from Buc with the intention of going through to London, where he would be delivering the biplane to the British Government. Getting away in very bad weather, a stop was made at Crotay for replenishment and, then, following the coast line, Boulogne was reached at 5 p.m., where it was decided to rest for the night. An attempt was made on Friday to cross the Channel, but fog rendered it inadvisable to proceed. Verrier ultimately on Monday morning, making a start at 6 o'clock, passed along the coast to Calais and, from there crossing over to Folkestone in 40 minutes, he continued on to London, landing at Charing, near Maidstone, en route, by reason of a thick ground fog. He reached Hendon at 9.21 after an hour's stay at Charing, having encountered strong winds all the way.

BRITISH NOTES OF THE WEEK.

An R.F.C. Station to be Moved.

IN all probability the Royal Flying Corps station at Cromarty will be removed to Fort George, which is about ten miles south-east of Cromarty. Here the ground is level and the Firth is open on both sides for the operations of the Corps. The Cromarty waters, it is reported, have proved unsuitable for the training of aviators, and Fort George is considered more suitable for service purposes. A point for the erection of the hangars has been selected on the shore of the West Bay.

The First Lord's Wife in the Air.

THAT Mr. Winston Churchill's recent experience on a water-plane was convincing is evidenced by the fact that Mrs. Winston Churchill followed his example on Tuesday of last week, when the First Lord of the Admiralty also repeated his experience under the pilotage of Lieut. Spenser Grey, using the Navy 90 h.p. Austro-Daimler Sopwith tractor. Mr. Churchill was up, starting from Brown's Field, Hamble, for a quarter of an hour, followed by Mrs. Churchill for about ten minutes.

Japanese Naval Officers at Upavon.

PERMISSION has been granted to the officers of the Imperial Japanese Navy, who are making aviation a study, to visit the Central Flying School and the Squadron Barracks of the Royal Flying Corps on Salisbury Plain.

G. L. Temple in France.

LEAVING Issy les Moulineaux, Paris, at 11.30 a.m., on September 4th, George Lee Temple, on his two-seater Blériot, flew to Valines, near Le Crotoy, a distance of 104 miles. Three landings were made during the journey, at Beauvais, Laboussaire, and near Abbeville. It was his intention to reach London, but during the last few miles a dense fog and some rain were encountered, whilst throughout the journey the wind was directly against him, his total flying time being 3 hrs. 4 mins. For the time being the voyage has been suspended, as Mr. Temple is laid up with a bad chill.

Mr. Glen Curtiss' Flying Boat in England.

FOLLOWING our recent announcement of Mr. Glen Curtiss' visit to Europe, during the week he has been in England and is arranging for demonstration flights of his air boat for those who are interested in this important section of aviation. In all probability Mr. Curtiss' machine will be located at Shoreham near Brighton, during next week, where no doubt it will create a considerable amount of interest.

Sale of the Cody Effects.

WHEN the aeroplanes, engines, and working material of the late Col. Cody were brought to the hammer by Messrs. Kingham and Kingham of Aldershot, in the wooden workshop of Col. Cody on Laffan's Plain, on Monday of this week, a good sprinkling of the

public were present, although bidding was confined to a very small number. The sums obtained for the various lots—some 200 odd—were quite inadequate, and, judged by the amount they represented, to the late Col. Cody, the prices were almost heart-breaking. Amongst those who helped to keep up the prices were Mr. Claude Grahame-White, of the Grahame-White Aviation Co., Mr. Fred May of the Green Engine Co., and Major Maitland of the Royal Flying Corps. The aggregate amount realised was about £700, the shed and workshop going for £90, and Col. Cody's very ingenious cable cart, which he used for his war kites, being knocked down for £4 10s.

Fellow-Scholars Fenwick Memorial.

MANY of our readers will be interested to know that the fund (amounting to about £35,) subscribed by a few admirers of the late Mr. Fenwick has been utilised in founding a "Fenwick Memorial Prize" fund at the High School, South Shields (where Fenwick spent a couple of years before going to Jersey); and in erecting an oak and bronze tablet, suitably inscribed, in the same school. A set of photographs framed illustrating Fenwick's short but enthusiastic career has also been given to the school by a personal friend, Mr. W. R. Binks.

Scarborough may have Flying Meeting.

THE visits of Mr. Salmel and Mr. Hawker to Scarborough have had the effect of awakening a good deal of interest in things aeronautical in the district. The Townsmen's Association is negotiating with a view to getting some of the Hendon aviators to pay a visit to the town.

An Aeroplane for India.

IT is announced that an aeroplane has been presented to the Indian Central Flying School by the Maharaja of Rewa. Capt. S. D. Massey, the chief of the school, will procure the machine in England.

The Astra-Torres Airship makes Renewed Trials.

ON Monday evening the new airship built for the Naval Wing of the R.F.C. was again under test at Aldershot. It will be remembered during her first outing a slight hitch occurred by the lowering of the pressure in the envelope. Since then some alterations to the steering and elevating gear have been made, and some good demonstration flights were made during the evening under the guidance of M. Hugon and M. Roussel, the pilot and assistant pilot respectively. The official observers on behalf of the Naval Wing on board were Commander Schwann and Commander Masterman, in addition to Lieut. Osborne, R.N., who will be the pilot of this dirigible. After further trials during the week, if satisfactory, the airship will be formally taken over by the Government.



The Manchester staff of A. V. Roe and Co., Ltd., taken in front of the offices.

AEROPLANE TYPES.

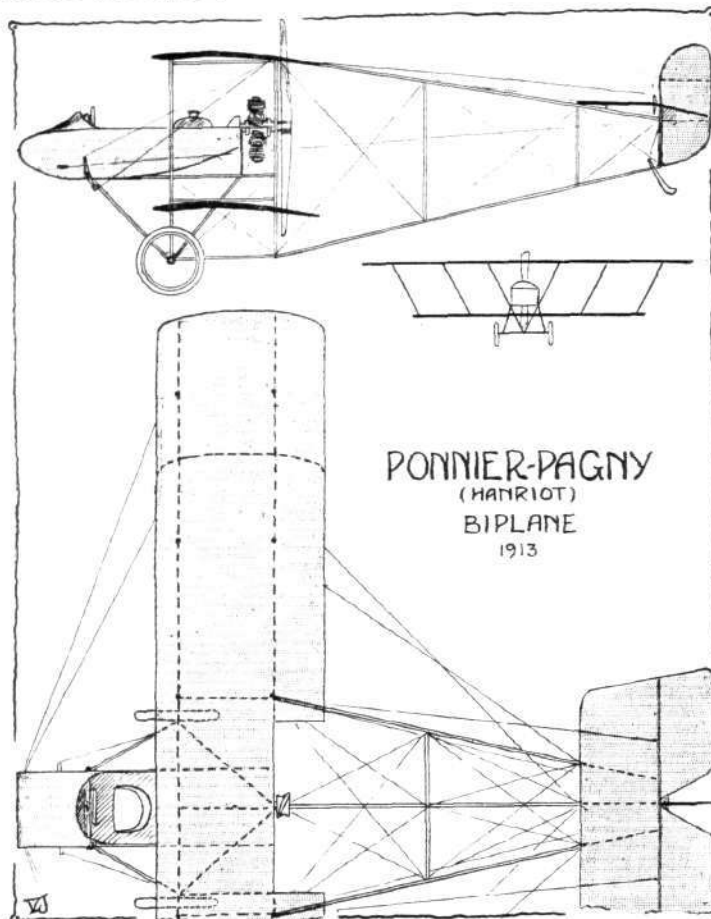
THE PONNIER-PAGNY BIPLANE.

SPECIAL interest is attached to this biplane owing to the fact that last week, in France, Bielovucic carried out some successful tests with an 80 h.p. two-seater model built for the War Office.

Although in general appearance similar to the Henry Farman biplane, this machine has several very distinctive features, viz. :—tubular steel construction, Constantin wing section with blunt entering edge, and the arrangement of the plane-struts, of which there are six pairs. The two central pairs are arranged in the form of a V and extend below the front and rear spars of the lower plane. The apex of the front V joins the axle, and that of the rear V joins the lower tail outrigger; both are connected by a central strut. The outer plane-struts slope outwards from the lower to the upper spars. Pilot and power plant are carried in a nacelle situated between the main planes and extending well forward. The tail plane, to which are hinged two elevator flaps, is non-lifting and set at a negative angle of incidence, and is mounted on two upper outriggers secured to the rear spar of the top plane. Lateral control is obtained by warping the main planes (*ailerons* have also been employed), by means of a wheel mounted on a rocking column, a to-and-fro movement of which operates the rear elevators for longitudinal control. The directional rudder is operated by a horizontal foot-bar.

The principal dimensions of the two-seater model are as follows :—*Span*—(Upper plane) 12,500 m.; (lower plane) 5,500 m. *Length*—7,200 m. *Chord*—1,700 m. *Gap*—1,600 m. *Supporting area*—30 sq. m. *Weight*—(Empty) 350 kilogs.; (useful load) 300 kilogs. *Speed*—115 kiloms. per hour. *Engine*—80 h.p. Gnome.

VEE JAY.

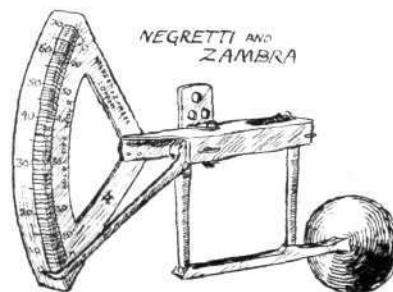


SOME ACCESSORIES.

THAT the Alexander Gross "Anti-Drift" aero compass, shown in the accompanying illustration, has several points in its favour as a compass for aircraft can be judged from the fact that it has been adopted by several Governments for use on military aeroplanes and dirigibles. It has also met with great success in this country. Its chief feature, as its name implies, is that it provides a means of indicating to the pilot whether or no the aircraft is drifting from its set course—a point of considerable importance in cross-country work. This end is attained by enabling the pilot to look right through the compass at the passing ground below, the compass

as trees, &c.) will pass more or less across the lines on the glass instead of parallel to them. Other features of this compass are the exceedingly clear markings, simple course setting arrangement, and the extreme sensitiveness and steadiness of the card. Messrs. Geographia, Ltd., of 33, Strand, London, W.C., supply these compasses, in addition to a large selection of other instruments, maps, &c.

SEVERAL instruments for aeronautical purposes are supplied by Messrs. Negretti and Zambra, of 38, Holborn Viaduct, London, E.C.—the old-established firm of scientific instrument makers who supply instruments to the principal observatories, the Admiralty, War Office, &c. The most important aeronautical instruments are, perhaps, the aneroid barometers for attaching to aircraft. One of these is contained in an aluminium case 6 ins. in diameter, having a leather back; it has a bold and legible altitude scale, and a clamp for fixing the scale before ascent. The hand can be set to zero, and may be fitted with a maximum attachment to indicate the greatest height attained. Similar and smaller sizes, 4½ and 3 ins. (the latter for attaching to the arm) are also made. Other instruments consist of recording barometers, including a pocket type in a mahogany case; recording anemometers (invented by Mr. W. H. Dines, F.R.S.), similar to those seen at many aerodromes; and flight speed indicators. One of the latter is illustrated by the accompanying sketch, from which its extreme simplicity is at once apparent. It consists of a metal cup, which is set with the mouth towards the direction of flight. The wind pressure on this cup transmits a proportional movement to a pointer (through the system of levers shown), thus indicating on the graduated scale the flight-speed of the machine.



having a glass bottom for this purpose, whilst the "card" is also transparent. Across the top glass are engraved parallel lines which can be set lying in the direction of flight. Thus it will be seen that should the aircraft be drifting sideways, objects on the ground (such

ROUND BERLIN FLIGHT.

THE official times for those competitors who flew the three circuits round Berlin have now been published, the placing with exact figures, &c., being given in our table below:—

Place.	Pilot and Machine.	Motor and h.p.	Constructor.	Time (3 circuits).		
				h.	m.	s.
1	Baierlein (*Otto)	100 Argus	Gustav Otto Flugmaschinen-Werke	3	1	54
2	Stiploschek (*Jeannin-Stahltaube)	100 Argus	Emil Jeannin Flugzeubau G.m.b.H.	3	14	32
3	Linnekogel (*Rumpler)	100 Daimler	E. Rumpler Luftfahrzeugbau G.m.b.H.	3	19	19
4	Vollmoeller (*Albatros)	75 Mercedes	Hans Vollmoeller	3	27	48
5	Thelen (Albatros)	100 Daimler	Albatroswerke G.m.b.H.	3	30	20
6	Langer (Pfeil)	100 Argus	Luftfahrzeug G.m.b.H.	3	40	29
7	Beck (*Kondor)	95 Daimler	Kondor-Flugzeugwerke G.m.b.H.	3	45	36
8	Schuler (Ago)	100 Mercedes	Max Schuler	3	47	57
9	Kiebling (Ago)	100 Argus	Ago Flugzeugwerke G.m.b.H.	3	53	3
10	Stoeffler, V. (Aviatik-Pfeil-D) ...	100 Daimler	Automobil-und Aviatik-A.G.	3	59	0
11	Weyl (Otto)	100 Argus	Gustav Otto Flugmaschinen-Werke	4	4	10
12	Friedrich (*Etrich-Taube)	95 Daimler	Sport-Flieger G.m.b.H.	4	5	34
13	Stoeffler, E. (Albatros)	100 Mercedes	Albatroswerke G.m.b.H.	4	8	1
14	Reichelt (*Harlan)	96 Argus	Harlan Verkaufs- u. Betriebs G.m.b.H.	5	6	35
15	Ingold (*Aviatik)	100 Argus	Automobil-und Aviatik-A.G.	15	55	9
16	Janisch (L.V.G.)	100 Daimler	Luft-Verkehrs-Gesellschaft A.G.	17	51	55

* Monoplane.



FOREIGN AVIATION NEWS.

A New World's Record Claim.

AT Constance, Gsell, on a waterplane, was flying on the 4th inst., for 3 hrs. 11 mins. 14 secs., accompanied by three passengers, establishing a new world's record for this essay, the previous best being on January 25th, 1912, by Grulich with 1 hr. 35 mins.

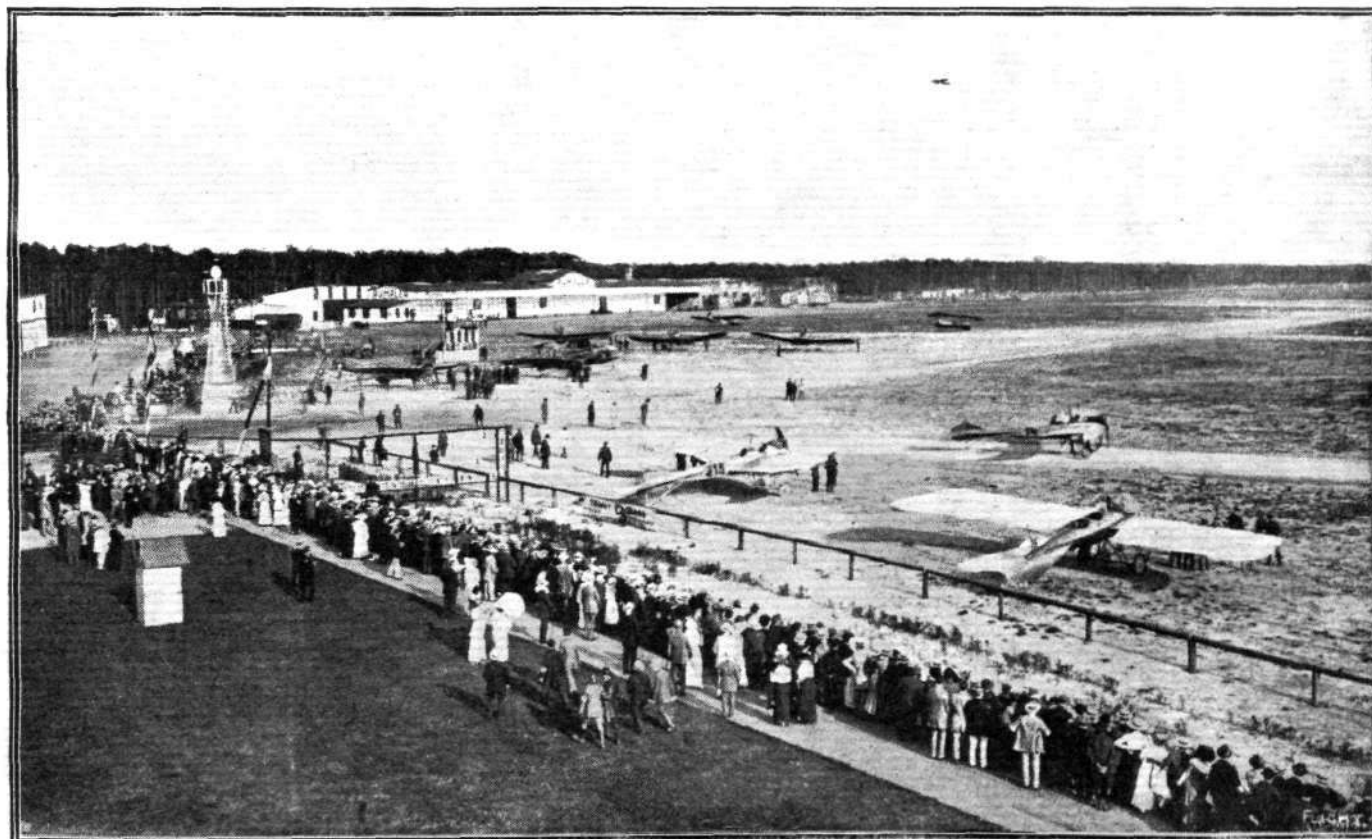
Fourny Continues for the Michelin Cup.

WITHOUT the slightest hesitation, Fourny resumed his circuits on Wednesday morning last week, when his total up to the previous evening was 6,476.8 kiloms. Since then he has steadily kept on day by day on his Maurice Farman, flying 708.4 kiloms. on Sept. 3rd, 4th, 5th, 6th, 7th, 8th and 9th, each day, bringing his total by the Sunday night to over 10,000 kiloms.—to be exact, 10,018.2 kiloms.—thus being a huge amount in advance of Cavellier's total of 7,096 kiloms.

As Fourny remains in perfect condition and as his machine and motor are flying without a hitch, there is no reason why he should break off for several days to come. His total distance up to Tuesday night was 11,435.6 kiloms.

Gordon-Bennett Cup at Rheims.

HAVING decided that the Gordon-Bennett race is to take place at the Rheims Aerodrome, the Aero Club of France have duly carried through the ballot for the order of starting for the French Eliminating Trials, with the following results. 1. Deperdussin, 2. Borel, 3. Breguet, 4. Nieuport, 5. Ponnier, 6. Deperdussin, 7. Borel, 8. Deperdussin. The Borels will be piloted by Daucourt and Chemet, the Breguet by Bregi, the Deperdussins by Prevost, Gilbert and Rost, the Nieuport by Espanet and the Ponnier by E.



THE ROUND BERLIN FLIGHT.—General view of the starting grounds in Johannisthal.

Vedrine. The Eliminating Trials will take place on September 27th; on the next day there will be speed and slow flying contests, an altitude competition and a cross-country race. For these the entries are one Borel, two Breguets, three Caudrons, six Deperdussins, two Goups, four Morane-Saulniers, two Nieuports and two Ponniers. Besides the pilots in the eliminating trials, others who will be flying on this day include, Maccon, Rene, Gaston, Lemoyne, Cavelier, Parlemin, Crombez, Vergniault, Cailleaux, Brindejone, Letort, Gobe, Helen and Bielovucic. The actual race for the Gordon-Bennett Cup is down for the 29th.

General Hirschauer Retires from Military Aeronautics.

It is authoritatively stated that General Hirschauer is likely to give up his position in Military Aeronautics about the end of the month and will be placed in command of a Brigade. Universal regret will be expressed at this decision as General Hirschauer has been such a splendid help towards developing the aeroplane in France. General Bernard will be the new Director of the "Fifth Arm."

The Ponnier-Pagny All Steel Biplane.

THE first tests of the 80 h.p. Gnome-engined biplane, which is closely interesting the War Office, were made at Mourmelon last week, when Bielovucic, with a passenger, made several flights. After this, he went for a trip to Rheims, carrying with him a passenger and reaching the Military Aerodrome in twenty minutes, being there received by Capt. Laborde. The new machine was minutely inspected the following morning by General Hirschauer.

After Deauville.

FOLLOWING the competitions at Deauville, most of the competitors and other aviators returned to their destinations by way of the air. Bertin on his Nieuport made a stop at the Château d'Angeville (Eure), where he witnessed the opening of a hunt, ascending again at 4.50 and reaching Villacoublay at 6. Renaux on his Farman carried with him as passenger a cinematograph representative of Pathé. Fog interfered considerably with his trip, however, forcing him to fly very low when following his route up the Seine. By noon he landed at Buc in perfect safety. Gaubert left on the Saturday morning carrying two passengers; he also experiencing mist troubles before reaching Buc.



Baierlein in the pilot's seat of the Otto monoplane, the winner in the Round Berlin flight.

Madame Richer Injured.

SUNDAY week, during a short flight at Rochebernard, Madame Richer got a nasty spill. In trying to avoid some trees she had to make a rough landing, her machine striking earth, nose on. Although Madame Richer was not seriously injured, she is far from convalescent.

Six More Two-Seater Blériots for French Army.

LAST week, under the pilotage of Perryon, Domenjoz, and Pegoud, six two-seater Blériots were put through their tests for the French Army, these completing a series of ten to be employed in the manoeuvres, and for the military pupils at the Avor Camp.

A Quick Trip from Villacoublay to Crottoy.

CAPT. GUILLABURT, the Chief of the Military Centre, Villacoublay, on a Nieuport-Gnome, on Tuesday last week, started from Villacoublay at 4.30 for Crottoy, taking with him his mechanic as passenger, arriving at the latter place at 6.25.



THE LATEST CURTISS FLYING BOAT.—In full flight over the Lake Keuka at Hammondsport, N.Y. Inset is a view of the machine during a banked turn,



WELL MATCHED.—A Maurice Farman avion *versus* motor boat.

Pegoud's Popularity.

AT the Ambassador's Theatre, Paris, on Wednesday last week, it was suddenly discovered by the audience that Pegoud, who has made such sensational flights on his Blériot, was amongst the audience. Immediately there arose cheer after cheer, so that it was impossible for the performance to proceed for at least a quarter of an hour, the actors joining in the applause to the hero of the hour. M. Bonnet, the inventor of the parachute which was first employed by Pegoud, and M. Sermet, director of Chauvière Propellers, accompanied Pegoud on his visit.

Gougenheim Returns to Etampes.

AFTER a two days' exhibition at Briare, where he flew on his Farman machine last week, Gougenheim returned to Etampes by way of the air, covering 150 kiloms. without a stop.

Henry Farman Pilots Chevillard.

AT the Bac Aerodrome, Henry Farman, carrying with him Chevillard as passenger, was last week testing a new machine with which Fischer proposes to have a try for the Michelin Cup. After-

wards he indulged in a test of speed on another machine, across country, against Chevillard.

Pegoud Going to Italy.

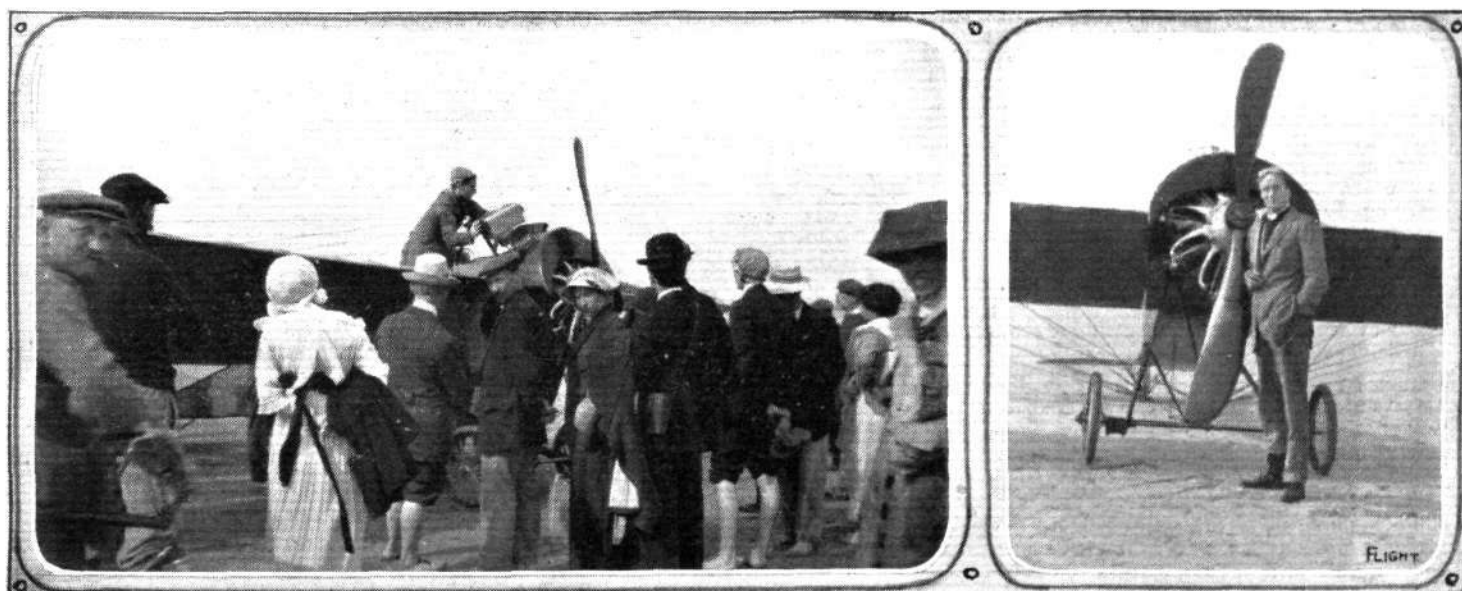
ALMOST immediately, Pegoud is to repeat his daring flights on the Blériot at the Mirafiori Aerodrome at Turin before a Military Commission.

Guillaux Over Paris Again.

ON his Clement-Bayard-Clerget, Guillaux last Thursday at Villacoublay, climbed 2,500 metres, in the meantime steering for Paris, over which he was flying for some two hours, finishing up with a spiral *vol plané* back to the Aerodrome.

E. Vedrines Tries Out the Ponnier Machine.

ON Tuesday last week, E. Vedrines flew the triangular "circuit" Mourmelon, Mailly, Sissonne back to Mourmelon in 2 hrs. 40 mins. including landings. On the next day before General Hirschauer at the Chalons Camp he put up a series of smart evolutions on his 50 h p. engined machine.



Lord Carbery and his 80 h.p. Gnome Morane-Saulnier at Le Crottoy, where he landed, having lost his bearings, upon the occasion of his recent flight across the Channel. Mr. Oddey, to whom we are indebted for these snaps, proved of considerable value to Lord Carbery, he being the only Englishman on the spot conversant with the journey, he having, it will be remembered, made the Cross-Channel journey with Mr. Sydney Pickles, as recorded in these pages. On the left Lord Carbery is seen filling up at Crottoy prior to his restart for England.

Touring by Way of the Air.

THREE Morane-Saulnier monoplanes, piloted by Leon Morane, with Madame Saulnier as passenger, Garros with a passenger, and E. Audemars with M. Saulnier as passenger, started away in company from Deauville on Tuesday, last week, reaching Villacoublay in 1 hr. 20 mins., Morane and Garros keeping well together the whole distance, while Audemars, who alighted for a short stop at Evreux to replenish his oil supply, arrived within a few moments of his fellow voyagers.

New H. Farman Biplanes.

LAST week Henry Farman was trying out at Buc a new 80 h.p. Gnome biplane. Filling up with fuel and oil for a 2 hours' flight, Mr. Farman climbed 300 metres in 1 min. 25 secs., 400 in 30 secs. more, and 500 metres in 2 mins. 27 secs. In regard to speed, over 110 k.p.h. was timed during the tests.

Henry Farman and Chevillard Flying at Boulogne.

SOME instructive flights were carried out last Friday by Henry Farman and Chevillard on waterplanes at Boulogne, a number of well-known men being carried as passengers. Although a strong northerly wind was blowing both aviators were giving some fine exhibitions of skill over the sea, "landings" being made on the water, followed by further flights. Enormous enthusiasm was created amongst the passengers by a flight round the Dutch Atlantic liner on its way from Rotterdam to New York.

Trying the Doran Biplane.

LABOURCHERE the military aviator, accompanied by his mechanic, has been trying the big Anzani-engined biplane of Commandant Doran. Starting from Villacoublay he flew to the Commandant's residence at Chatillon-sur-Seine, continuing then on to Dijon, Amberieu and Annecy where he was at an altitude of 2,000 metres. Then making for Chambéry, Grenoble, Lyon and Nevers, he so returned to Villacoublay. In the course of his flight, he struck the route of Capt. Bares who was flying on his Farman-Rhone with M. Girod the French Deputy as passenger. The two aviators travelled in company on the stretch from Grenoble to Lyon.

Capt. Bares Finishes his Cross-Country Journey.

AT last Capt. Bares has finished up the long tour made through France, accompanied by M. Girod, a Deputy and Army Office Secretary, as passenger, which has been in progress since August 20th, when he started from Buc with M. Girod, in order that this official might have a personal and extended experience of the value of aeroplanes for service in the Army. Between August 20th and September 4th a distance of about 2,000 kiloms. was covered by the two travellers. The machine employed was an 80 h.p. De Dion Bouton-engined Maurice Farman, Capt. Bares being followed day by day by his mechanic in a car in which was conveyed a few tools in case of necessity. Fortunately, however, no mishaps occurred calling for their use. The experiences of M. Girod should be of great value in further promoting the cause of aviation with the French Government, as he will convey his impressions in a formal report to Parliament immediately.

E. Vedrines Passes for his Military Brevet.

AT the Ponnier School at Rheims, E. Vedrines on Thursday last week flew in splendid form for his military ticket. Starting from Mourmelon at 5 a.m. he reached Villacoublay in 1 hr. 20 mins. in spite of a thick fog, restarting from there at 5.20. He encountered heavy winds, obliging him to make a stop at Vouzy at 7.15. There he left his machine under some trees, where it had to submit to the attentions of a storm during the whole night. The next morning, although rain was still pouring down, he got away for Mourmelon, which he reached about a quarter of an hour afterwards. In the evening he flew round the triangular course to Mailly, Sissonne back to Mourmelon, 215 kiloms. in 2 hrs. 40 mins., including stoppages. On Saturday, before General Hirschauer, Vedrines went through a number of evolutions on the Ponnier machine at the Chalons Camp.

Maurice Farman's Week-end Jaunt.

AS usual Maurice Farman made his journeys last week-end by way of the air, instead of in orthodox manner. On the Saturday, leaving Buc at 4 p.m. with Dr. Rigal as passenger he made direct for Deauville, passing over Evreux and alighting on the Plage at 6 o'clock. By 6.30 Sunday morning he was away again, M. Rigal still accompanying him, and after flying over Lisieux a stop was made at Tillieres for *dejeuner*, Buc being reached at 3.30 after a southerly detour as far as Chartres.

Berlin-Paris.

STARTING on Friday of last week at 5.30 a.m. from the Johannisthal aerodrome, the German pilot Herr Friedrich with Dr. Elias as passenger, on an Etrich-Taube, commenced a voyage which he hoped to terminate the same day in Paris, but circumstances were against him. Although he was bothered by mist, he

determined to make the attempt, and after a good flight he descended at Walhrewald, near Hanover, at 7 o'clock, where he replenished his fuel and oil tanks, making a re-start at 9.15, steering away towards the west. Flying well, after a descent at Gelsenkirchen, he arrived at Berghen Sainte-Agathe, about 13 kilometres from Brussels, at 2.15 p.m., where the two voyagers replenished the inner man as well as again taking in petrol and oil. At 4 o'clock Friedrich was away again, hoping to reach Paris during the evening, but after passing over the Belgian frontier he encountered a violent storm which was raging in the district, forcing him down at Sart les Bruyeres, a few kilometres from Mons, where he decided to stay for the night, having accomplished roughly about 700 kilometres from his starting point. Next day the weather was still as bad as ever and he therefore postponed the last lap of the journey until Sunday, when he got away at 1.15 in spite of a thick fog, a damaged map, and a compass out of order. After a couple of stops at Guise and Senlis, he arrived at Villacoublay at 5.15 (passing over Paris, which was enveloped in a heavy mist) there to be received with a splendid ovation by a large crowd of his fellow aviators who were in strong evidence by reason of there being a big festival in full swing at the time of his arrival.

An Aviation Week at Johannisthal.

FROM September 28th to October 5th an autumn aviation meeting is taking place at Johannisthal under the patronage of the German Aero Club and the Imperial Automobile Club. Money prizes of the value of about 50,000 marks are to be provided, one being of 15,000 marks offered by the Minister of War.

Good Flying at Boxdorf.

ON the 31st ult., Schmidt of Leipzig, starting from Boxdorf at 5.28, landed at Leipzig at 6.42, covering the 118 kiloms. in 1 hr. 4 mins. Bentz who also hails from Leipzig, attained a height of 600 metres in 9 mins.

Wilhelmshafen to Heligoland.

ON Saturday last, Lieut. Langfeld, with the Captain of the Gygis as passenger, made a sea flight to Heligoland by waterplane, covering the distance in about three hours against a very strong wind, which necessitated their descending to the sea several times during the flight.

Fatal Accidents in Germany and California.

ON Thursday of last week, whilst flying at Brieg, Lieuts. Von Eckenbrecher and Prinz, whilst experimenting with a newly constructed Rumpler-Taube were killed, following the breaking of one of the wings when about 300 ft. up. A sub-officer named Kahle, after flying from Strasburg to Mulhouse, was precipitated to earth from about 30 metres, when attempting to land, and the machine catching fire, Kahle was badly burnt, dying next morning in the hospital.

At San Diego, California, Lieut. Moss Love of the U.S. Cavalry was killed instantly when his aeroplane made a dive of 800 ft. to earth, at the Army Aviation School, whilst descending from an altitude of about 2,000 ft.

Two Further Fatalities in Germany.

A FLIGHT by Dr. Oscar Ringe of Hannover on a Fokker machine at Johannisthal on Tuesday last, ended fatally. When about 600 ft. up the machine was seen to dive, and although the aeroplane was not greatly damaged, Dr. Ringe was found to be dead. It is suggested that he had an attack of heart trouble to which he succumbed whilst he was still flying.

At Wanne, on the same day, Herr Senge, an aviator attached to the Wanne Aeroplane Works, was killed whilst flying at Grevenbroich.

The Italian Circuit Emilie.

SEPTEMBER 21st has been fixed for this circuit, which will start at Parma, and pass Reggio, Modena, Bologna, Ferrara, Mirandola, Guastalla, back to Parma.

The Zeppelin "L1" Disaster.

THE great calamity which has again overtaken Count Zeppelin's aircraft—the best of all, "L1"—is the worst of the series of disasters which have occurred in connection with the fleet of dirigibles evolved from the workshops of the Zeppelin Company. The suddenness of the collapse, with the consequent loss of life, at least thirteen having perished, including the Chief Pilot, Capt. Hanne and Capt. Metzger, has been a terrible shock throughout the world to those who have followed the history of these huge airships. From accounts at present to hand, "L1" was taking part in the German manoeuvres of the High Seas Fleet, and when within about 18 miles of Heligoland Light, she was struck by a violent gale amidst ships, being crushed down thereby to the sea, where the violent waves finished the wreckage. The disaster is referred to Editorially elsewhere.

THE THEORY OF THE DUNNE AEROPLANE.

(Concluded from page 994.)

Now opposed to this we have at the front of the machine a very slight positive dihedral effect, due to the coning of the wings making it easier for the air to get away outwards than inwards, and also to the fact that the windward wing opposes a deeper camber to the current than does the leeward wing.

Each of these opposing devices being dihedral, and so—even if unopposed by the other—tending to take up a position of equilibrium, it is not of very great import whether they exactly balance each other or only nearly so. But what is of importance is that since each is strongly resisting the action of the other it effectually damps out any oscillations that other might tend to produce.

We have, however, found no difficulty in so balancing the opposing couples that ordinary side gusts, such as one encounters when flying in moderate winds, produce absolutely no perceptible lateral disturbance.

But side gusts unfortunately are not always steady. We have to

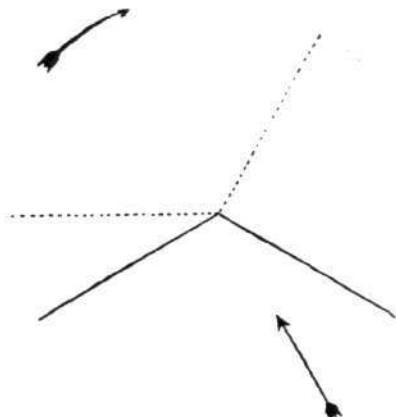


Fig. 19.

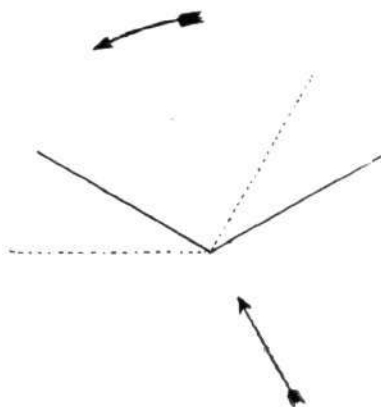


Fig. 20.

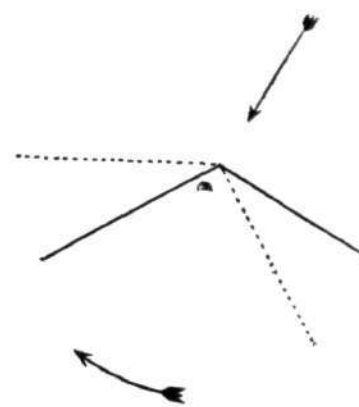


Fig. 21.

deal with fierce gusts, irregular gusts, gusts with an upward trend or a downward trend, local side-puffs striking one portion of the wing and not the other, and narrow-diametered *remous*.

Now we noticed while dealing with the longitudinal stability, that the amount of negative surface exposed depends upon the angle of incidence. If you look again at Figs. 4a, 10 and 11, you will note that there are two points in the span where the leading edges cross the back edges. Inside these points the wings are positive, and would lift the windward side. Outside these points they are negative, and would depress the windward side on account of their negative dihedral effect. You will see that as the mean angle of incidence of the machine grows smaller, these points, where the edges cross, move inwards, increasing the negative dihedral surface and decreasing the positive surface.

You will also note that at normal flight angles the negative dihedral surface is very small. To carry a lot of unnecessary negative surface until you actually needed it would be a source of inefficiency. Our negative dihedral surface develops as it is required. Thus, if, after viewing the machine from in front, you were to step to the right or left, you would notice that as you move round, so does the point on the wing nearest you, where the leading and trailing edges appear to cross, travel more forward towards the bow. For example see Fig. 5, which shows the aspect presented to an unusually strong and sudden side gust, and note that a very large portion of the near wing has become negative, the far wing having practically "vanished."

Now look again at Fig. 4a. If the side gust affects the distribution of pressure on the wings in such a way as to render the negative dihedral couple (*i.e.*, the windward-rocking couple) too powerful: which is equivalent to saying that the negative pressures, in the region of the negative tail tips, are augmented more than those on the positive surfaces: the effect will obviously be not only to roll the machine to windward, but also to *elevate* it.

But elevating the front has, as we have seen, the effect of reducing the amount of the negative (windward-rolling) surface and increasing the amount of the positive (leeward-rolling) surface. Thus the windward roll started by the unevenly distributed gust is almost instantly checked.

Conversely, if the gust accentuates the effect of the leeward-rolling couple, which is equivalent to saying that the positive pressures are augmented, the effect will be not only to roll the machine to leeward, but also to depress the bow—for the centre of positive pressure is behind the centre of gravity. Depressing the bow, as

we have seen, increases the amount of the windward-rolling negative surface, and decreases the amount of the leeward-rolling positive surface.

Flying this machine in very "bumpy" air, or side-on to a thoroughly bad wind, one notices little sudden movements, gently checking themselves, about axes which run, roughly speaking, parallel to the backward-sloping wings.

And so we come to our final device. Part of this I have explained so often that I think everyone here must understand it pretty thoroughly; so I will merely point out once more, as briefly as possible, that when the wind strikes this machine somewhat on the side as shown by the arrow in Fig. 4b, the windward wing meets that wind with its broadest side towards it, and the leeward wing meets it in the end-on position.

Now everyone knows that Langley proved experimentally that if you expose two long narrow planes at a small angle of incidence to the wind, the one broadside-on with its longer edge forward and

the other end-on with its shorter side forward, the former will experience the greater pressure. Let us refer to this superiority of the broadside-on plane as "Aspect-Ratio Effect."

Now, curiously enough, hardly anyone seems to have noticed as anything worth remarking, that the experiments showed further that as the angles of incidence are gradually increased, this disproportion in pressure rapidly diminishes, till, when the angles are thirty degrees, the pressures are equal, while beyond that angle the conditions are actually reversed and the pressure on the end-on surface becomes the greater.

So in such a condition of affairs as is depicted in Fig. 4b, the pressures, negative as well as positive, all over the right wing are greater than those on the left wing. Now, if the machine rotates to leeward, the angle of incidence of the positive (leeward-rolling) portion is increased, and so the aspect ratio effect of that part is diminished. But the negative angle of incidence of the negative (windward-rolling) portion is *decreased*, and so the aspect ratio effect on that portion is augmented. Exactly the converse occurs if the machine is rotated to windward by an over-powerful negative dihedral couple.

This damping and stabilising action has to be regarded as superposed upon the various lateral stabilising effects we have already considered, which is, perhaps, a rather complicated idea to absorb.

Under ordinary conditions of flight its action is but slight, and is in general a damping one. It renders the effect of the alteration in the relative proportions of positive and negative surface due to change of mean angle of incidence less sudden in its action, while it adds to the damping effect the opposing dihedrals have on one another.

But its great value lies in this: that apparently no matter how sudden, violent, and unevenly applied be the gust, you cannot possibly be blown over either way to much beyond 30 degrees. I say "apparently," because I have not yet flown the machine in the hurricane which would be necessary to put this quality to actual test, and indeed I find that in this case I have quite a strong conviction that theory is preferable to practice.

To sum up. We have:—

FOR LATERAL SAFETY.—

(a) The fact that no matter how the machine be banked, it will automatically supply sufficient centrifugal force to keep up the support against side-slip.

(b) The fact that, owing to its tendency to level up from any bank and widen out any turn, it cannot spiral dive.

(c) The presumed fact that it cannot be blown over to anything much beyond 30 degrees, owing to change in aspect ratio effect.

(d) The extreme sensitiveness to control.

FOR LATERAL STEADINESS.—

(a) The negative dihedral behind the centre of gravity.

(b) The opposition of this by a positive dihedral in front of the centre of gravity.

(c) The alteration of the relative surface-proportion of these, whenever one gets excess pressure.

(d) Superposed on these:—The variable aspect ratio effect.

(e) Superposed again on these:—The tendency of the machine to turn towards any bad side-gust, thereby making it less of a side-gust.

Contrary to the general idea, and certainly contrary to what I myself expected when I began work on this type, the lift per horse power is quite good, while the speed is, I think, somewhat superior to that of the ordinary wing. The gliding angle of the aerofoil is, I believe, much better than that of an ordinary aerofoil with its tail.

The following certificate supplements the report in the Journal for January, 1911, in that this second trial was undertaken with an official observer on board.

ROYAL AERO CLUB OF THE UNITED KINGDOM.

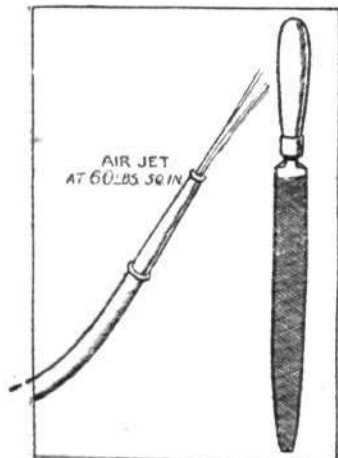
CERTIFICATE OF PERFORMANCE NO. 1. Flight of Aircraft uncontrolled by pilot. (Under the Competition Rules of the Royal Aero Club).

THIS IS TO CERTIFY that on December 11th, 1912, a Dunne biplane was entered for trial by the Blair Atholl Aeroplane Syndicate, Ltd., the object of the trial being to show the behaviour



A REMARKABLE EXPERIMENT.

AN ordinary engineer's file is sustained in mid-air without visible means of support if its handle is placed in a jet of compressed air issuing at about 45 degrees from the horizontal. We are indebted to Mr. J. W. Cloud, Chief Engineer to the Westinghouse Brake Co., for particulars of this experiment, which he first carried out many years ago and again repeated in our presence the other day at his London works.



The file is suspended in mid-air by the action of the jet.

If a file handle without the file be used it displays most remarkable buoyancy and can be knocked about, within reason, without destroying its support.

If an obstruction such as the open hand be approached towards the handle from the back, the handle will advance towards the jet. Even when the obstruction is quite close behind the handle, the supporting effect is still maintained, but the least interference with the air stream in front of the

handle will cause it to drop like a stone.

The shape of the handle makes a great deal of difference. If the rounded end of the handle be cut off flat at the top the handle will not support itself. The best sort of shape appears to be rather a "shapeless" sausage-like handle without any particular curvature.

The experiment is, of course, an interesting demonstration of the efficacy of the cambered top surface, which in a wing contributes three-quarters of the lift. Indeed, in this experiment there is no bottom surface at all, the weight being entirely supported by the suction above the curved top of the handle.

It is interesting to observe how gravity opposes the driving force of the jet. There is a position of equilibrium

of this biplane when flying without being controlled in any way by the pilot.

Particulars of Aircraft.

Type: Dunne biplane, two-seater. Overall span, 46 feet. Total lifting surface, 552 square feet. Motor, 50-60-h.p. 4-cyl. Green.

Controls: Hand levers only, no automatic controlling mechanism, gyroscopic or otherwise, fitted.

Description of the Trial.

The trial took place on Salisbury Plain on December 16th and 17th, 1912. On the first flight on the 16th the wind was blowing in gusts up to 20 m.p.h., and the pilot ceased to manipulate all controls for a period of one minute five seconds, whilst flying over a spot where irregular disturbances of the air were, from the actual experiences of the official observer, known to prevail. During this period the aircraft was quite stable laterally, there being an absence of both quick jerky movements and periodical rolling. The apparent effect of a gust was to cause the aircraft to turn steadily to the right or left.

The second flight on the 17th was made under slightly better weather conditions, and the pilot ceased to manipulate all controls for two periods of one minute each. During one of these periods the controls were locked, and the aircraft described a complete circle of 360 degrees, banking of its own accord at the correct angle. There was no feeling of side-wind on the face of the official observer, thus showing absence of sideslip either inwards or outwards.

[To the above report may be added the additional information (i) that, at the time of the first flight, pilots flying 80-h.p. monoplanes reported using their controls continuously. (ii) That the engine of the Dunne machine was "missing" the whole time.—ED.]

about, say, 6 inches from the nozzle in which the file will hang mysteriously in the air quite still. By gently disturbing it, the file will glide in a ghost-like fashion towards the jet and then retreat; the oscillation continuing indefinitely.

Mr. Cloud originally "discovered" the experiment when making tests on the well-known Westinghouse brake system for trains and recognising the principles involved he did not need to read text.



Arctic Explorers and Aviation.

FOLLOWING the announcement that Capt. Amundsen has been taking lessons in aviation, it is reported from South America that Capt. Doxrud, who commands the "Fram," on which the Amundsen expedition will proceed to the Arctic regions, is to take a course of instruction in flying at San Francisco.



Photo by Miss Dora Lane.

"BETWEEN FLIGHTS."—An unconventional snap of Mr. F. P. Raynham on Shoreham beach.



Edited by V. E. JOHNSON, M.A.

Motors for Models.

"MAY I be allowed to thank you for the many interesting hours I have enjoyed when reading your 'Models' column, and to express the hope that the progressive methods of constructive criticism may continue to advance?" So writes Mr. A. R. Pearson *re* the above, and continues as follows: "There is one matter that up to the present I have not seen mentioned, and knowing the dislike I have seen frequently expressed to the ordinary rubber motor, it has surprised me [that the question of the spring motor has not apparently been discussed. Now it seems to me that if an effective spring motor could be thought out and constructed the scientific side of model aeroplaning research work could be the more easily pursued and the sporting side at the same time given much more scope. I believe attempts have been made to produce a spring motor suitable for this purpose, but so far as I have been able to gather all these efforts have been unsuccessful. As to why all these efforts should have been unsuccessful it is difficult for me to understand, unless it be that the matter was not taken in hand by the right people. Messrs. Gamage had, I believe, one on sale weighing about 7½ ozs., which would run from 30 to 50 secs., and I understood that this was the best that could be obtained with a steel spring. I examined this, and it struck me that the makers had endeavoured to get sufficient strength in the spring to give a great velocity which necessitated a strong steel plate as a foundation. Why not a less strong steel spring, and instead of considering it as a separate entity, imagine it built into a model with all the added strength to its construction, augmented by the strength that the fuselage of the model would afford? It seems to me that with a well-gear motor a run of 80 to 100 secs. should easily be obtained in a weight say of 4 to 5 ozs., and if this could be done I believe the scientific side of model aeroplane construction could be immediately advanced.

"Let us take, for instance, the Dunne method of construction. How could one hope to experiment or build models on that principle with the possibility of any hope of much success with a rubber motor? A power-driven motor for small models is out of the question, and it seems to me that the steel spring affords the only solution to the problem. It would be interesting to know what you and others think on the subject, and I trust you will be able to deal with it in an early issue, as it must be of considerable interest to many."

The idea of using a steel spring as a source of motive power for model aeroplanes is one which has again and again been suggested to the writer. Frequent references occur to it in the earlier numbers of FLIGHT. Since the steel spring form of motor is used with so much success in watches, clocks, model steamboats, locomotives, &c., &c., it is a very natural conclusion to come to, that the same thing more or less should hold in the case of model aeroplanes. Those who hold this opinion quite overlook, however, the difference in the amount of power required in the case of aerial locomotion, compared with any other form of transport.

It cannot fail, however, to be instructive to compare different types of model motors when used on some common form of locomotion, other than of an aerial nature. As it so happens, the writer made some tests a short time ago with steam, electricity, rubber, and steel spring motors on some small gyroscopic mono. rail models, which bear directly on the case in point. One test was the driving of a gyroscopic model (the same in every case) along a rail some 50 yds. long—the model in every case carrying its complete motive power.

There was some slight difference in the weights, but the complete models in every case weighed well over 3 lbs. The weight of rubber required to do this was 11 grammes only, and it propelled it at running pace; it consisted of two motors of two strands of $\frac{1}{16}$ strip each, 2 ft. long, geared through bevel wheels on to the same driving wheel and axle. All gears were of the same size.

In the case of the steel spring, which, as it so happens, was one of Messrs. Gamage referred to by our correspondent, the greatest difficulty was experienced in getting it to drive the model at all, for the simple reason that about 80 per cent. of the motive power of the spring was absorbed in driving the gear necessary in this type of motor to obtain any duration. So small is the power left over that quite a small additional resistance raises it the additional 20 per cent., and the motor stops.

In the case of all the types of motors tried, anything in the nature of gearing was found to be terribly wasteful of power. That such was wasteful the writer knew, but he had no idea how wasteful it

was until he made these experiments. In the case of geared rubber motors exactly the same thing holds. The only case in which gearing is of any use is in the case of a model with a single propeller, in which case it does pay to use two exactly similar strands of rubber and two gear wheels (the axle of one being also the axle of the propeller) having exactly the same number of teeth. The reader must not, however, draw the erroneous conclusion that even in this case nothing is lost in friction, because there is. For instance, suppose your model flies with twelve strands, then you will find on splitting your motor in two that two skeins of six strands each will be insufficient and that seven, or it may be even eight, will be required for each motor.

The most economical and the most efficient manner in which rubber can be used as a motive power is in the form of long skeins of few strands and off many turns devoid of all gearing, and the reader will find that all "records," whether of distance or duration, are made with twin motors of this type. Possibly longer flights in the future will be made with motors of a treble, or even a quadruple type. About this we need not immediately concern ourselves, because even if such be the case no new principles will be introduced.

Attempts have been made to split up the double motors of the twin propeller type of model into four strands by means of gearing in the same way as in the case of the single propeller model already referred to, but so far without any very pronounced success—the principal records having been made with twin rubber motors of considerable length and few strands, well lubricated and wound as nearly as possible to breaking limit, combined with propellers of large diameter, a machine of efficient surface and low head resistance flown somewhat high so as to take full advantage of the glide at the end of the flight.

Now if we desire to build a spring motor which shall be economical of power, we are driven to pursue the same road as that which has been followed in the case of the evolution of the rubber motor. In other words we must dispense with all gearing or reduce it to the absolute minimum, and use a very long spiral steel spring some 3 ft. in length, made of fine steel piano wire of many coils. Some three years ago the writer constructed several such motors, the coils having running through them a central rod; the whole idea being taken from the form of spring used in certain kinds of spring blinds. With the efficient surfaces and propellers now in use, durations of half a minute could undoubtedly be obtained with them. The longest duration which I personally obtained was about 19 secs.

But even under the most favourable circumstances, such cannot compare with rubber as a motive power; from 5 to 6 times the amount of energy can be stored in a well-lubricated rubber motor compared with a spring motor of the same weight. Now the objection, *i.e.*, the scientific objection, which can be brought forward against the rubber motor is the spreading out or extension of the weight longitudinally, which gives rise to a large moment of inertia about the lateral axis of the machine, whereas it is one of the chief aims of good aeroplane design to keep the moments of inertia about all the three principal axes of the machine as small as possible. But as we have already shown exactly the same objection can be urged against the steel spring motor when used in a form that is of any practical use.

When we take the case of the compressed air motor with its long cylindrical air chambers, we find that the same thing holds.

Even in the case of a steam plant (flash boiler type), the same thing holds—although of course in a less degree—the benzoline reservoir, lamp, boiler coils, engine, being most conveniently placed one behind the other, with the water reservoir (of streamline form) either above or below.

The writer has tried some experiments with a gunpowder motor of catharine wheel or turbine form—the idea is an excellent one—but I would (when thinking of my past experience) rather leave future experiments in this direction to others.

We are thus driven back on to the petrol motor as the motive power for real scientific work. This, at present, at any rate, means models of considerable size.

The designing of a petrol motor of, say, the rotary type of much smaller dimensions and power than those which have so far successfully flown model aeroplanes; although undoubtedly a problem of very great difficulty, cannot, we think, be regarded as an impossible one.

The final and best solution of this problem certainly appears to

lie in the successful construction of a *small* internal combustion engine of about $\frac{1}{2}$ h.p., and not more than one pound in weight. The first problem to be tackled and solved is undoubtedly the invention of some method of ignition, which shall be some ten or twelve times as light as the present battery and coil method, which latter is in its turn (on a small scale at any rate) far lighter than any form of magneto.

Had all the brain power, energy, time, and money, which has been devoted to the successful evolution of the rubber motor been applied to this problem, we have not a moment's hesitation in saying that the present status of model aeroplaning would have been very different from what it is. Unless some better motive power than rubber be developed for model aeroplanes, we see no further use for the ordinary size and type of model than as a form of sport, spectacular display, and the acquiring of a certain amount of elementary aeronautical knowledge of a more or less limited kind.

Model Aero Clubs.

Ever since FLIGHT first came into being the formation of Model Aero Clubs has gone merrily on, the total number to date being over a hundred. Many of these clubs have no doubt had a very ephemeral existence, some have probably only existed on paper, and some have never had probably more than half-a-dozen members. Some have been founded—fallen into abeyance and been re-founded—in one case that we know of this has happened two if not three times. Yet the number of clubs which send in anything in the nature of a monthly report does not number twenty.

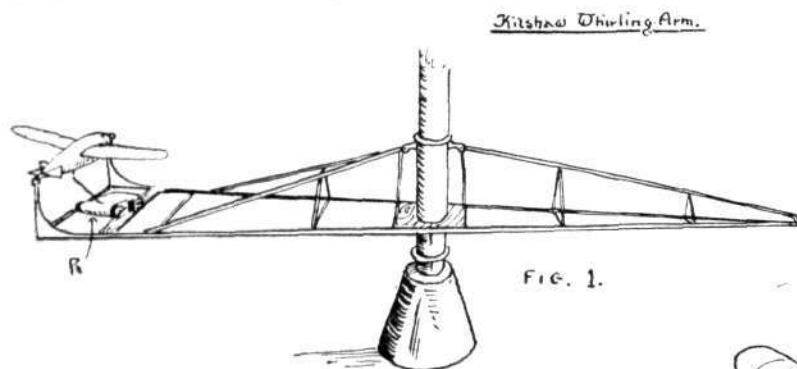
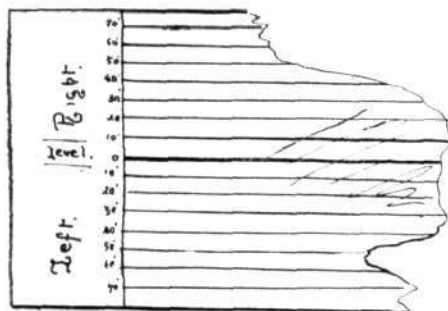


FIG. 1.



Kilshaw Whirling Arm.

him as being far too small. The one method has been tried, and I do not think any more than a partial success can be claimed for it. The other certainly appears worth a trial. In any case, it would be a very valuable lesson to learn, why it is that so many clubs have had but such a very ephemeral existence.

Dihedral and Incidence Angles and Stability.

Mr. G. H. Kilshaw sends us the following very interesting description and drawings *re* the above:—

"In response to your letter of the 4th inst. the following sketches and description will, I trust, fully explain how I propose to carry out the experiments. Before commencing to describe the sketches, &c., I would like to say that the chief reason why I propose testing stability on a whirling arm, instead of in free flight, is due to the uncertainty that must beset all planes of not being under the same conditions in the latter case, owing to the fact that no wind is even approximately constant. It is therefore almost impossible to ensure that the various sets of planes have received the wind in the same quarter or with the same force, since the various machines are almost certain not to have described the same flight path. Fig. 1 shows the whirling arm, F being a fan to deliver a wind gust as the arm rotates; R is a drum, on which an arm, C (Fig. 2), is hinged from the body of the testing model, which carries a marking point. Over the drum a length of paper is made to travel, the drum being driven by clockwork. The marking point of the hinged arm rests on the centre line of the paper when the model is level. It is obvious that any cant or inclination of the model one way or

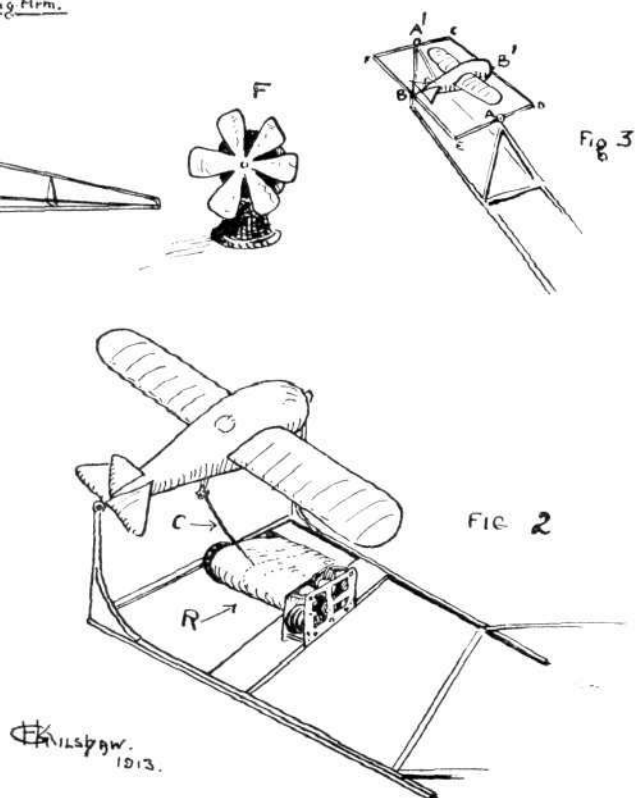


FIG. 2

FIG. 3.

From the very commencement FLIGHT has given every possible encouragement to the movement in every way.

That there should be at the present moment such a small number of clubs actually in active existence, shows, we think, that there is or has been something wrong in the movement—to a certain extent some common error. It is not a case of a large initial club formation and then a cessation. The founding of such clubs goes on unceasingly, or at any rate the endeavour to found such. Practically speaking, we hear of one every week, sometimes two or three.

Now, very broadly speaking, we believe such clubs have had the two following features in common: A more or less ambitious programme and a very small subscription. Now, we are afraid the two cannot go together. If the subscription be a very small one, this necessitates a correspondingly large membership, and the larger the membership the more likely for discordant factors to be in evidence. So far as real useful aeronautical work is concerned, a small club of a dozen members, or even half-a-dozen, with a fairly high subscription, would be quite as well off financially as a club with a much larger membership and a much smaller subscription, and would, at any rate according to the usual run of things, be far more likely to work in unison. In the case of every model aero club with which the writer is acquainted, the subscription has always struck

the other will carry the pointer to the right or left of the centre line. Since the same 'body' will remain throughout the tests, it will be possible to rule the paper to coincide with the movement of the marker, in order to show the degree of cant of the model. Fig. 3 is a suggested arrangement to employ when testing for both longitudinal and lateral stability. The model is suspended in a frame, C, D, E, F, which is itself pivoted at B, B', to allow of side or lateral oscillations, the frame itself being pivoted at A, A', on the whirling arm, this latter being made adjustable to allow of its being made to coincide with the centres of gravity and pressure of the model.

"If the tests are made as above, another recording device similar to R (Fig. 2), and working at right angles to it, will be necessary, in order that the fore and aft oscillations may be duly recorded. It will also be possible to alter the direction of the wind blast from the fan, F, by making the latter swivel round a few degrees, preferably controlled from where the arm is pedal-driven, so that it may be made to alter a degree or so, say, each revolution of the arm, to enable the current of air to attack the model in various positions. Each of the sets of planes to be given about six circuits, and to have a minimum span of 3 ft.

"There is, however, one drawback, and that is, that I cannot see at present any successful way of recording side-slipping or nose-

diving, or to allow for these to take place, should this be the model's real inclination when banked past a certain point. I shall be pleased of criticisms and suggestions *re* the above."

Referring to Mr. Kilshaw's last sentence, we shall be glad to hear what our readers have to say on the subject.

Mr. Kilshaw does not state how he proposes to control the swivelling of the air fan; if his central axis be hollow, as in the writer's, this can be done by means of a system of wires or cords, or a series of articulated levers carried down the central hole; but a much better way would be by means of electro magnets suitably placed on the arm, and a series of switches connected with the magnets by means of wires carried down the centre of the hollow spindle, and dipping into little mercury cups. The fan, F, is, we presume, to be electrically driven, in which case the speed could be altered at will if desired. The mercury cups could be tiny concentric circular troughs, half full, say, of mercury, they would not, of course, rotate. We do not think it an essential feature that the minimum wing span need be 3 ft., or indeed anything near it, in fact, 18 ins. seems ample in such a case as this.

Single Propeller Models.

Mr. Oswald Hamilton, Jun., writing *re* the above, says: "I note with great pleasure Mr. Horner's plea for the above type, as this is at present a subject which is engaging my attention, and one I had intended drawing Mr. Akehurst's attention to, but before moving in the matter I thought it would be advisable to make my own premises safe at the club here, hence we have altered our basis for the establishment of record performances. As matters are arranged at present, a competition, as Mr. Horner says, will inevitably result in a win for the twin type model, as there exists no opportunity of comparison upon an efficiency or even handicap formula which would upon merit show the best machine. The development of the twin type has too truly besmirched the efficiency in terms of power of the single propeller type—as the onlooker only measures efficiency in terms of distance travelled, which I contend is not a true conception of efficiency at all, as your remarks *re* the A frame would prove.

"The single propeller type is, I think, of a more scientific nature than the twin in so far that you must of necessity be perfectly accurate in adjustment in every way, as the machine is relatively a slower flyer and is in consequence more sensitive in the air relative to its controls."



KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Hand-launched ...	{ Distance ...	R. Lucas ...	590 yards.
	{ Duration ...	L. H. Slatter ...	111 secs.
Off ground ...	{ Distance ...	L. H. Slatter ...	365 yards.
	{ Duration ...	L. H. Slatter ...	2 mins. 11 secs.
Hydro, off water ...	{ Duration ...	L. H. Slatter ...	45 secs.
Single-tractor screw, hand-launched ...	{ Distance ...	C. C. Dutton ...	266 yards.
	{ Duration ...	J. E. Louch ...	68 secs.
Do., off ground ...	{ Distance ...	C. C. Dutton ...	190 yards.
	{ Duration ...	J. E. Louch ...	45 secs.

Official Trials.—The official trials for August were held on the Aero Models Ground, on Aug. 30th, and Mr. C. C. Dutton, of the Paddington Club, raised the record for tractors (h.-l. and off ground), the previous best being 173 yds. and 148 yds. respectively. Messrs. F. G. Hindsley, A. F. Houlberg and Vincent Smith were the observers.

An Apology.—The hon. secretary tenders an apology to the members and readers on behalf of the assistant hon. secretary for the absence of the official notices in last week's issue, owing to their being sent in too late, the hon. sec. being on holidays.

Model Engineer Exhibition, Oct. 10th to 18th. All entries should now be sent in so that some idea of the space required may be reserved. All clubs entering as a team should provide their members with a card, which must be 3½ ins. x 1½ ins., with name of club in block type, thus:—

THE KITE AND MODEL AEROPLANE ASSOCIATION.

Member's Name

This is on account of the organizers wishing to have all entries in each class grouped together. All members entering aero motors should get same ready and have at the East London College, Mile End Road, on Oct. 6th, when the bench tests will take place at 6 p.m. Special rules for these tests are as follows: 1. The model will be judged on a weight per horse power basis, the ratio of weight per horse power not to exceed 16 lbs. 2. The weight is to include all accessories, with fuel for a minimum run of 2 mins. 3. The total weight of the entire plant must not exceed 16 lbs. 4. Marks up to 25 per cent. will be awarded for evenness of power curve. 5. A brake of yellow pine (as shown on page 448 of April 19th issue of FLIGHT), cut to a suitable length for absorbing the power generated, should be mounted on the motor. The brake must not be weighed. 6. The motors to be placed in a current of air during the test. 7. All motors to be ready for testing by 6 o'clock, on Oct. 6th, at the East London College.

Weight Carrying, Duration, and Stability Competition.—Another class has been made in connection with this exhibition and will be known as Class 6, for single screw r.o.g. models. Tests: (a) duration of flight (minimum, 25 secs.); (b) stability; (c) construction and design. Maximum marks, 150. First prize, £3, presented by Col. Fullerton. Special rules governing this competition: 1. Competitors must exhibit their models in the M.E. Exhibition. 2. Models must weigh not less than 1 lb. or more than 1½ lbs. 3. Every machine to carry 4 ozs. dead weight in two weights of 2 ozs. each. 4. These weights to be supplied by competitors and easily detachable for weighing before and after the competition. 5. The judges can, if deemed necessary, order another trial, and can withhold the whole or any part of the prize if models do not in their opinion

[Referring to this letter, and also to that of another correspondent, who accuses us of having stated "that the twin-propeller system is unscientific and the single-propeller system is"—the writer desires to state, in the first place, that he never made any such statement as the last-named, as any reader of FLIGHT can see for himself by reading his remarks in August 9th issue.

Both types are of necessity scientific. Now, before we can say that one thing is more scientific than another, it is necessary that the term scientific should be defined. As already stated in these columns, all accurate knowledge is scientific knowledge, and one thing could only then be said to be more scientific than another when it gives us a more accurate or a more advanced knowledge of any subject. Now, in several respects, the single-propeller type of model appears to do this. The twin-propeller A-frame type, by its very design, skilfully avoids certain important aeronautical items such as torsional framework stresses, so-called propeller torque, gyroscopic action, &c., which it behoves every aeronautical student to become acquainted with. Its swifter flight speed, combined with the above, also very largely eliminates the question of stability altogether. Thus, although the twin-propeller type of model is a later product than the single propeller, it certainly appears in several respects to be the more elementary type of the two. But it is also true that the manner in which gyroscopic action is eliminated in the twin propeller model is truly scientific; speed still remains one of the most potent factors *re* stability (when flying at any rate); also the balancing of torsional stresses in mechanical structures is essentially scientific. The question raised by Mr. Horner was not, we think, the relative value of the two types so much as a timely warning of the ever-increasing neglect of a valuable type, valuable educationally that is, apart altogether from actual practice. To find that there are quite a large number of aeromodelists who have never flown a single propeller type of model, certainly came as something in the nature of a shock to the writer.—V.E.J.]

Re Double Winder.

"I have always," says Mr. Rogers, "used a double winder, i.e. converted egg-beater. For models up to 6 ozs. they work admirably, but the motors of heavier machines offer so much resistance that the bad constructed egg-beaters soon wear and the cogs begin to miss. I should like to hear of a properly constructed double winder." [This has already been dealt with in these pages.—V.E.J.]



fulfil the conditions, or for any other reason. It is hoped at least 50 models will be entered in this class.

The competition for the handsome Michelin trophy, for a team of three kites, attracted an entry of 12 of the best flyers, including Major B. Baden-Powell. The judges, Messrs. C. Brogden, R. H. Lanchester and the assistant hon. sec., made the following awards:—

No.	Competitor.	Type.	Angle.	Strength and Construction.	Collapsibility.	Stability.	Total.
1	A. W. Brown, (Croydon) ...	Box and Wing	57	90	90	90	327
2	J. H. Warwick (Woodford) ...	Brookites	46	75	90	60	275
3	G. T. White (Brockley) ...	White Patent	48	90	90	60	288
4	A. Collins (Croydon) ...	Box and Wing	31	75	80	50	236

Mr. G. T. White's team broke away, therefore did not fulfil the conditions, so J. Warwick takes second place. All the other competitors had all or part of the team break away before the judges' first round. Mr. A. W. Brown holds the trophy for one year and takes the Association's Silver Medal. Mr. Warwick and Mr. White, respectively, taking the Silver and Bronze Medal of the Association. Mrs. W. H. Akehurst presented the prizes to the winners. The hon. sec. proposed a vote of thanks to the donors of the trophy, to the judges, and to the competitors for their keen fight, and regretted that the wind had been so high, he being among those who had lost his team.

Model Competition, the Rushmere Pond, Wimbledon Common, Sept 20th, at 3 o'clock. Entries close Saturday, Sept. 13th. For single screw hydro-aeroplanes rising off the water (members only). Prizes: 1st, cup, presented by Mr. V. E. Johnson; 2nd, cup, presented by Mr. G. Rowlands; 3rd, Bronze Medal of the Association. Tests: (a) duration flight (minimum flight, 15 secs.); (b) steadiness in flight. Maximum marks, 100—75 for test a, 25 for test b. Rules: 1. Competitors must be at the judges' flag at 2.45. Any competitor not present at that time will be disqualified. 2. Models must not weigh less than 4 ozs. 3. Competitors will be allowed to make reasonable repairs at the discretion of the judges. 4. Competitors will not be allowed to replace any part without the permission of the judges. 5. Each competitor is entitled to three trials. 6. All competitors must launch their machines in the same direction.

Model Competition.—Wimbledon Common, September 20th, at 3 o'clock. Entries close Saturday, September 13th. Junior distance competition (open to the world); free to members; non-member's entrance free, 1s. Prizes: 1st, silver medal (presented by the Star Aeroplane Co.); 2nd, model aeroplane, value 15s. (presented by the Star Aeroplane Co.); 3rd, aeroplane materials, value 10s. (presented by Messrs. T. W. K. Clarke and Co.); 4th, Boy's Book of Aeroplanes (presented by Lieut. T. O. B. Hubbard, R.F.C.). Rules: 1. Competitors may submit models of any kind, home-made or purchased. 2. Models must not weigh less than 4 ounces. 3. Competitors must be at the judges' flag at 2.45; those not present at that time will be disqualified. 4. Reasonable repairs will be allowed at the discretion of the judges. 5. Models may be started by hand, or in any other manner. 6. Each competitor is entitled to three trials, if time permits. 7. The length of flight will be measured in a straight line, from starting point to alighting point, and not along the line of flight.

Research Section.—The research committee will carry out a series of tests at

the laboratory of the East London College, commencing in October, under the direction of Dr. A. P. Thurston, the chairman. Volunteers from affiliated clubs are required to conduct tests on certain shapes and types of models, to obtain the centre of lift and drift for certain velocities and also the position of the centre of pressure.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.

AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (N. Branch) (25, CHURCH CRESCENT, MUSWELL HILL, N.).

SEPTEMBER 13th, tractor practice; September 14th, practice, 10 a.m.; September 20th, monthly competition, r.o.g. duration.

Bristol and West of England Aero Club (Model Section) (3, ROYAL YORK CRESCENT, CLIFTON, BRISTOL).

SEPT. 13TH, gliding at Portbury, at 3.30 p.m. (if the weather conditions are unsuitable, on Sept. 15th, at 6 p.m.). Sept. 20th, model flying at the Sea Walls. Oct. 4th, Autumn Model Flying Competition. This will be held on the Downs, at 3 p.m. The events will be as follows: (a) duration rising from the ground (50 per cent. will be added to the duration of all models carrying 1 oz. weight); (b) ornithopter and helicopter duration event; (c) duration event for monoplane or biplane carrying no elevator or tail; (d) duration, hand-launched. Events a, c and d open to the world (20 per cent. will be deducted from the duration of all models not fitted with effective protectors). Programmes on application. After the 27th inst., the address of the model section will be No. 42, Royal York Crescent, Clifton, Bristol.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

SEPTEMBER 13th, the Club will be represented in the Distance and Stability Competition of the K. & M.A.A. at Greenford. Other members flying at Sudbury as usual.

Wimbledon and District (165, HOLLAND ROAD, W.).

SEPTEMBER 13th and 14th, flying as usual.

UNAFFILIATED CLUBS.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).

SEPTEMBER 13th, Kidbrooke 2.30-5.30 p.m., Woolwich Common 4.30-6.30 p.m.; September 14th, Blackheath 7.30-10 a.m., Lee Aerodrome 10.30 a.m. to 12.30 p.m. The final for the second quarter of the "South Eastern Trophy" competition will take place on the last Sunday in this month.



CORRESPONDENCE.

Capt. Aubry's Inverted Flight.

[1787] In your article "The Corkscrew Twist" in this week's FLIGHT you say, in reference to Capt. Aubry's inverted flight on March 24th last, "but as we only have the newspaper report of that accident we do not vouch for the truth of the details." May I point out that Capt. Aubry's own account of his fall appeared in *La Revue Aérienne* of April 10th, 1913, together with a facsimile of a document signed by Commander Lenhardt, Capt. Godefroy, and Lieut. Belabre, who were eye-witnesses of the accident. I think the following is a fair translation of the latter:—"The officers mentioned here certify the correctness of the present report. Placed at about 100 m. from the place of the accident, they very plainly saw the machine fall vertically for about 200 m. after the stopping of the motor, then turn round and 'plane' the wrong way up, the aviator being head downwards, and finally again fall vertically until about 100 m. from the ground. At this moment the machine took its normal position and the motor was restarted."

In his article Capt. Aubry says:—"Vers 400 mètres, mon appareil, sensiblement horizontal, fit un vol plané à l'envers," and refers to his machine describing "une sorte d'S gigantesque."

Vincent Square, S.W.

C. NICHOLSON.

Bending or Distortion.

[1788] In the photograph on page 911 a cable can be seen starting from the rear side of the *cabane* and apparently reaching the front wing-spar at the attachment nearest to the tip of the wing. I say "apparently" because the photograph has suffered in reproduction, and it is not quite clear to which attachment the cable proceeds.

If the cable proceeds along its curved line to the outer attachment it is a proof that the apparent bending is due to the camera, since in reality the wire should be straight, or if slack and under the influence of the wind pressure, curved very slightly in the opposite direction.

If on the other hand the cables are straight to their fastenings it is a proof that photographic distortion was absent, and therefore that the wing-spars were really bent.

Birmingham.

ERNEST COUPLAND.

[1789] I have before me a photograph of a 60 h.p. Deperdussin on the ground. By drawing lines similar to those in your photograph of Mr. W. Spratt in his machine at Hendon, I obtain the same results as those in FLIGHT. Namely, curvature of the front edge in both wings, and curvature of the bow of attachments by which the upper wires are fastened to the spars.

I should think your paper would have old photographs in which you could follow through the tests, for it certainly is of great importance as to whether the wings bend back or not; but as far as I can see it seems only to be a matter of photographic distortion.

L. L. R. E.

A Correction.

[1790] With reference to our recent advertisement regarding the 80-hour test of 50-60 h.p. engine in the French Automobile Club Trials, we very much regret that the wording was apt to be misleading, and we therefore take this opportunity of correcting same as follows:—

"The only engine in the test having run 80 hours without incurring penalty."

THE BRITISH ANZANI ENGINE CO., LTD.,
H. BAYLEY, Sales Manager.

30, Regent Street, S.W.,
September 3rd.



AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Official Notices.

Elections.—Member: Dr. R. Mullineux Walmsley. Associated Members: Capt. Dreyer and Lieut. T. Toyoda, I.J.N.

Fellowship Election.—Members are reminded that all ballot papers for the election of First Fellows and Fellows must be returned to the Secretary not later than the 17th inst.

BERTRAM G. COOPER, Secretary.



IMPORTS AND EXPORTS, 1912-13.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see FLIGHT, January 25th, 1912:—

	Imports.		Exports.		Re-Exportation.	
	1912.	1913.	1912.	1913.	1912.	1913.
January ...	£ 619	£ 12,097	£ 2,412	£ 4,005	—	£ 1,510
February ...	3,110	17,361	36	3,447	—	690
March ...	640	20,425	950	1,924	600	1,042
April ...	4,820	15,593	72	5,524	50	1,413
May ...	7,494	51,241	1,350	3,726	154	830
June ...	7,928	14,905	419	1,408	300	1,106
July ...	13,794	14,469	5,376	3,812	967	1,250
August ...	8,559	17,993	1,342	2,805	2,040	510
	46,964	164,084	11,957	26,651	4,111	8,351



Aeronautical Patents Published.

Applied for in 1912.

Published September 11th, 1913.

24,321. J. WULFING. Floating dock for airships.
24,049. W. WEBB. Dirigible airship.
28,405. A. DOUTRE. Aeronautical machines.

Applied for in 1913.

Published September 11th, 1913.

6,563. G. HERVIEU. Hangars for aerial vessels.
8,737. R. P. TIMSON AND G. N. ALBREE. Aeroplanes.
10,182. P. WESTPHAL. Aeroplane ribs.
11,890. W. TURKA. Flying machines.

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